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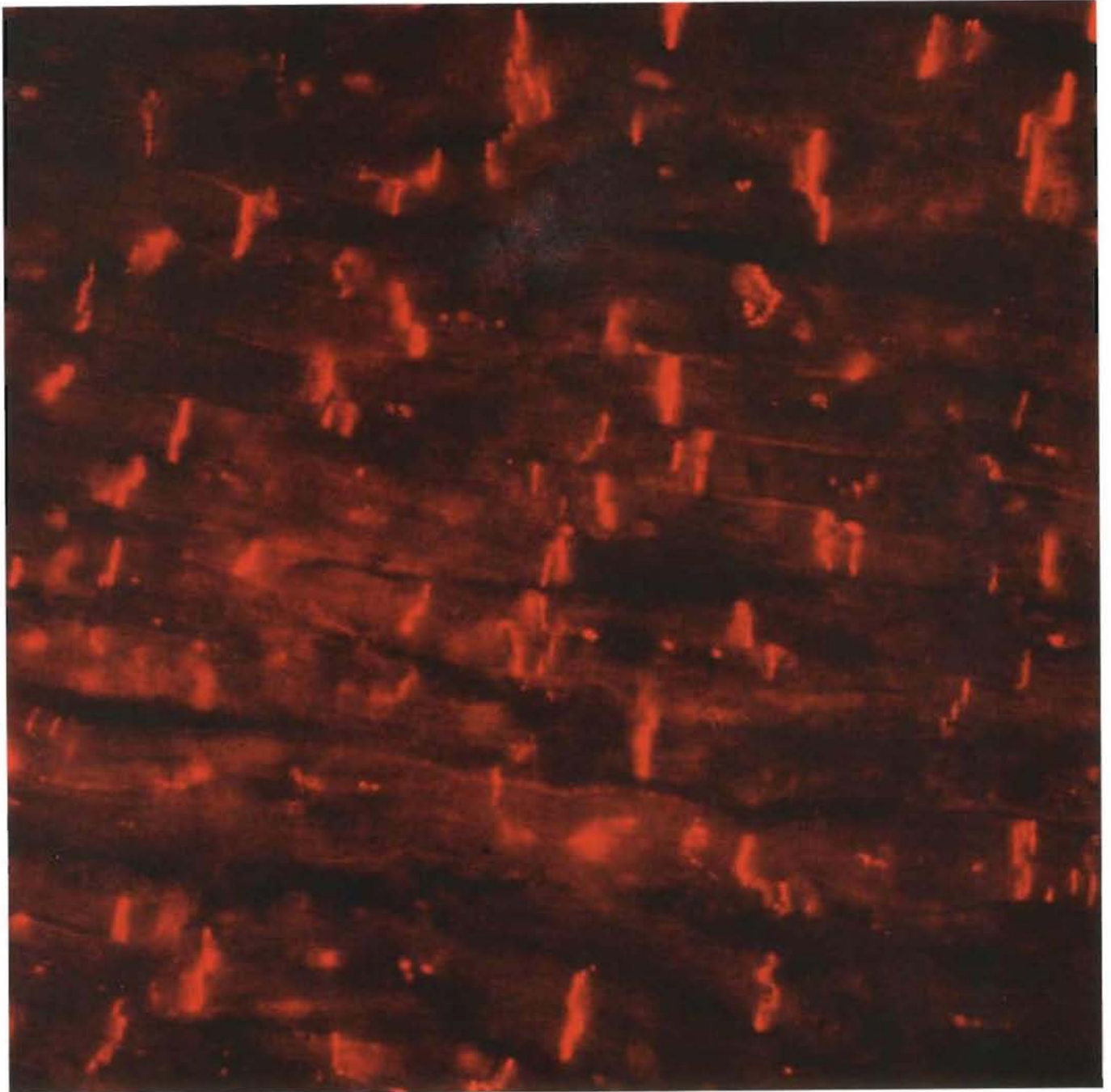
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Outlook

Washington University School of Medicine

Winter 1994



Prostate Cancer • Gap Junctions • Reflux Remedy



There she is. Heather Whitestone, the first hearing-impaired woman to wear the Miss America crown, was a student at Central Institute for the Deaf at Washington University Medical Center from 1984-87. Whitestone, who lost her hearing when she was 18 months old from a reaction to a DPT shot, came to CID at the age of 11. An extraordinary student, she made six grade levels of improvement in reading in just three years and was ready for high school. CID is one of four private schools in the country that teach deaf elementary school children speech and language skills while they learn the same academic material as other children. Photo by Globe Photos Inc.

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THE COVER

Immunostained proteins produce a bright fluorescent signal that marks the junctions at which heart cells communicate. In the heart, cellular interdigitation is complex and highly adhesive, with a single cell linked in perhaps 100 places on its surface. For more on the work of Jeffrey Saffitz, M.D., Ph.D., with gap junctions, see the story beginning on page 12.



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FEATURES

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A team that takes as its motto "no one should die from asthma," identifies allergens and devises interventions.

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Kodner Elected Fellow

IRA J. Kodner, M.D., associate professor of surgery at the School of Medicine and chief of colorectal surgery at Jewish Hospital, has been elected a fellow of the American Surgical Association.

The organization, which has 1,000 members worldwide, is the oldest surgical association in the United States. ●

Winters Tapped As Director

KAREN S. Winters, M.D., assistant professor of clinical medicine, has been named director of Student and Employee Health. She replaces Cathy Lazarus, M.D., who has accepted a position at Tulane University.



Karen S. Winters, M.D., examines a student patient.

In her new role, Winters will see patients in the Student and Employee Health Clinic, supervise the clinic staff, and develop and implement new programs of care.

Winters joined the School of Medicine in 1993 as associate director of the Emergency Department at Jewish Hospital and will continue in that position. Before joining Washington University, she

was in private practice with Bi-State Medical Consultants Inc. in St. Louis.

Winters received her medical degree from Southern Illinois University in 1983. She currently chairs several committees at the School of Medicine. ●

Evers Heads Anesthesiology

ALEX S. Evers, M.D., has been named Henry Eliot Mallinckrodt Professor and head of the Department of Anesthesiology.

The Mallinckrodt Professorship in anesthesiology was established in 1948 by Mr. and Mrs. Edward Mallinckrodt, Jr., in memory of their son. The chair was most recently occupied by William D. Owens, M.D.

Evers, who is a professor of internal medicine and of molecular biology and pharmacology, joined the medical school faculty in 1983. He was the medical director of the surgical intensive care unit at Barnes Hospital from 1986 to 1991, and he became acting head of anesthesiology in 1992.

His research concentrates on the molecular mechanisms through which anesthetics depress nervous system function. He focuses on the target molecules with which volatile anesthetics preferentially interact. Using labeling techniques, Evers has identified various proteins involved in those interactions as well as the structures of specific anesthetic binding sites. His laboratory also works to identify the specific cellular functions that are affected by volatile anesthetics.

Evers did a residency and a fellowship at Massachusetts General Hospital in Boston. Prior to that, he had been an intern and a resident in internal medicine at Michael Reese Hospital in Chicago.

Evers was a recipient of an American Heart Association Established Investigator Award from 1990 to 1994 and a Josiah Macy Foundation Fellowship from 1985 to 1986. ●

Crane Named Outstanding Teacher

JAMES P. Crane, M.D., associate vice chancellor and associate dean for clinical affairs, was recognized in September by former residents in the Department of Obstetrics and Gynecology for his dedication to teaching.



James P. Crane, M.D.

Obstetrics and gynecology residents who worked at the School of Medicine from 1975 to 1980 selected Crane to receive the outstanding teaching award, which is given every five years to a member of the obstetrics and gynecology faculty.

In recognition of Crane's commitment to teaching, his name has been inscribed into the "Memorial Wall" located in front of the old Maternity Hospital building. The wall is dedicated to those who taught obstetrics and gynecology in the "tradition of the St. Louis Maternity Hospital."

Crane joined the School of Medicine faculty in 1973. He also

serves as professor of radiology and obstetrics and gynecology and associate professor of medical genetics. ●

For Pioneering Achievement

JOHAN W. Olney, M.D., professor of psychiatry and neuropathology, was honored with a \$50,000 Charles A. Dana Award for Pioneering Achievement in Health in November.

Olney was recognized as a pioneering neuroscientist who helped to establish glutamate as a major excitatory transmitter in the brain. Glutamate now is recognized — largely because of Olney's research over the past 25 years — as a neurotoxin that contributes to neuronal degeneration in a number of neurological disorders.

In the early 1970s, after discovering that glutamate can kill nerve cells in the brain via an excitatory mechanism, Olney coined the term "excitotoxicity" to refer to this neurotoxic process, and he hypothesized that glutamate might play an important role in neurodegenerative diseases. Today, the excitotoxic mechanism described by Olney is believed to be responsible for nerve cell degeneration in very common acute brain disorders such as stroke, trauma and epilepsy, and also possibly in chronic disorders such as Alzheimer's disease, Huntington's chorea, amyotrophic lateral sclerosis (Lou Gehrig's disease) and AIDS dementia.

Olney was honored along with Jeffrey C. Watkins, Ph.D., now an honorary professor of pharmacology at the University of Bristol, U.K., and Phillippe Ascher, Ph.D., director of the Neurobiology Laboratory and the Biology Department at the Ecole Normale Supérieure in Paris. ●

Lewis Directs Emergency Medicine

LAWRENCE M. Lewis, M.D., associate professor of medicine, has been named director of the division of emergency medicine in the Department of Internal Medicine.

Lewis was formerly director of the emergency medicine division at St. Louis University Hospital and an associate professor of surgery and medicine. He served as director of emergency medicine at St. Louis University for nine years.

His research interests include work with head injuries, transcranial Doppler ultrasound in cardiopulmonary resuscitation, use of photography in evaluation of motor vehicle accident victims and gender bias in the evaluation of chest pain.

Lewis received his medical degree from the University of Miami Medical



Lawrence M. Lewis, M.D., in trauma room 1 of the Barnes Hospital Emergency Room.

School. He completed a residency program in internal medicine at Jewish Hospital in 1979. ●

Society Cites Civitelli's Accomplishments

ROBERTO Civitelli, M.D., assistant professor of medicine, has received the 1994 Fuller Albright Award from the American Society for Bone and Mineral Research.

The prestigious award is given annually to a young investigator for significant accomplishments in bone and mineral research. Civitelli received the award in September during the society's annual meeting in Kansas City MO.

Civitelli studies signal transduction and communication between bone cells in the body's skeleton. His research has contributed significantly to the understanding of osteoporosis and other disorders of skeletal metabolism.

Civitelli's studies have demonstrated that the effectiveness of osteoporosis treatment is related to the rate of bone remodeling and that

lifetime estrogen exposure and heredity are the major determinants of premenopausal bone mass. His studies also have shown that a slight vitamin D deficiency exists in postmenopausal women with low bone mass and that the amino acid lysine can boost calcium absorption in women with osteoporosis.

Civitelli, who is co-director of The Jewish Hospital's Bone Health Program, has made significant contributions to the current knowledge of signal transduction mechanisms in bone cells. More recently, in studies analyzing bone cell communication, Civitelli has demonstrated that a particular protein called connexin 43 is responsible for cell-to-cell communication between bone-forming cells, called osteoblasts. ●

Aiding Access

PICTURE identification cards will be issued to all medical school faculty and staff as part of a new access control system currently being installed. The cards, which work like sophisticated keys,

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**KATHY
WHITE**
PROTECTIVE SERVICES

will improve after-hours security and aid access to the facilities.

Worn like a badge, the card bears an employee's name, photograph and department. All of the medical school's 7,000 employees should have their cards by Feb. 1, according to David W. Thompson, director of protective services for the medical school.

"This system is designed to open up the campus and make it more accessible to authorized persons while improving safety for individuals in our facilities after hours," says Thompson.

Initially, the cards will allow access to authorized entrances at the North Building, Medical Library, South Building, McDonnell Science Building (east, south and dock entrances), McMillan Building (east entrance and south elevator). Card systems in place at Olin Residence Hall, Clayton Avenue Garage and the Clinical Sciences Research Building will be converted.

Card-accessed entrances will be added later at the East Building, Blue Cross Blue Shield Building, Old

Shriners, Wohl Hospital, Wohl Clinic and Renard. The system is designed to be compatible with those of sister institutions at the Medical Center as well.

The card takes only minutes to produce and initially will be paid for by the department in which the employee works. There will be a \$10

fee to replace lost or stolen cards. When leaving the university, the card must be returned to protective services where it will be automatically deactivated.

Sensormatic Electronics of Deerfield Beach FL is installing the state-of-the-art system. ●

Kessler's Advice: Maintain Excellence

AT a recent event honoring fellows at Jewish Hospital, David Kessler, J.D., M.D., commissioner of the U.S. Food and Drug Administration, said that the way to preserve healthcare is to maintain excellence — in patient care and in scientific exploration.

Kessler was guest speaker at an Oct. 30 brunch at the Ritz-Carlton in St. Louis to recognize fellows and to celebrate the 75th anniversary of research at Jewish Hospital.

"Open scientific exploration and the compassionate care that goes beyond medical solutions — these are the values that have always sustained us," says Kessler, who served as medical director of the hospital of the Albert Einstein College of Medicine at Montefiore Medical Center in New York prior to his appointment with the FDA in 1990. "The two pillars of excellence must never be contaminated. We must maintain these values in the days of transition."

Kessler says one result of healthcare's current state of flux is that medical providers may lose emotional contact with patients,

causing them to become fearful and feel helpless. "Those of us there to provide care must also provide comfort," he says. "Our mission is not just to cure, but to heal as well. That means...that those who come within the embrace of our influence will leave that embrace for a life that is a little bit finer and more flourishing than it was before."

Regarding research, Kessler says enterprising spirit should drive scientific discovery, not seek out commercial advantage. "When scientists become entrepreneurs in the traditional, financial sense of the word, there may be reason to be concerned," he says. "Universities and medical centers must maintain sufficient independence to shape their own agendas without regard to the bottom line." ●



David Kessler, J.D., M.D., center, talks with Wayne M. Lerner, D.P.H., president and CEO of Jewish Hospital, left, and David M. Kipnis, M.D., Distinguished University Professor, and his wife, Paula.

Imaging Re-imagined

MALLINCKRODT Institute of Radiology's new Imaging Center, a facility dedicated to cutting-edge, multidisciplinary radiology research, opened Nov. 11.



At the opening of the Imaging Center, the new, high field strength magnetic resonance scanner is flanked by some of those who will use it in their research, from left to right: Weili Lin, Ph.D., MR physicist; Debiao Li, Ph.D., MR physicist; Tom Miller, MR general manager for Siemens AG, and E. Mark Haacke, Ph.D., professor of radiology and director of the magnetic resonance imaging laboratory.

The \$12 million facility consists of a four-floor, 48,000-square-foot addition to the medical school's East Building and 22,000 square feet of renovated space in the East Building.

Mallinckrodt Institute established the Imaging Center to provide a facility for the development and application of advanced imaging technologies. The heart of the center's mission is to foster collaborative work using positron emission tomography (PET) and magnetic resonance imaging (MRI), two technologies that are proving to be critical tools in revealing brain and heart function, among other uses.

Radiologists, psychologists, neurologists, engineers, chemists and physicists will conduct research concerning brain functional imaging, nuclear medicine, computer imaging and neuropsychology at the center. Among their projects: functional mapping of the mind,

studying the cause of neurological and cardiovascular diseases, development of new radiopharmaceuticals for evaluating breast and prostate cancer and developing computer systems for delivering high-resolution medical images to remote sites.

The Imaging Center houses two PET scanners; four magnetic resonance scanners; laboratories for three-dimensional image processing, radiopharmaceutical development and neuropsychology research; sophisticated computer graphics workstations; a spiral computed tomography console, and a prototype machine called a tandem cascade accelerator — technology for producing radiopharmaceuticals. ●

Promoting Wellness

ON Nov. 15, BJC Health System announced plans for a new and expanded program of Women's and Children's Health Services in the St. Louis area. BJC will integrate obstetric, gynecological, newborn and pediatric clinical and educational services among its seven metropolitan-area hospitals to create a new model for addressing local healthcare needs.

The program will deliver women's and children's services through a coordinated approach that focuses on health promotion and education and continuity of life-long healthcare. Instead of emphasizing acute care, BJC will offer a complement of health services designed to prevent illness and to treat health problems as effectively, conveniently

and efficiently as possible. In addition to offering hospital care, this model includes wellness education, primary care, ambulatory care, rehabilitation services, skilled nursing, long-term care, home care and hospice care.

"In the past, the emphasis in healthcare focused on treating disease and illness that had already occurred," says D. Michael Nelson, M.D., Ph.D., professor of obstetrics and gynecology and director of Maternal Fetal Medicine at the School of Medicine and a member of the task force on women's and children's healthcare.

Nelson says the new approach will concentrate on preventing illness and promoting life-long wellness through comprehensive educational and guidance programs.

The consolidation and reorganization of services will take place during the next five years. ●

A Champion For Change

ANATIONWIDE program to reform medical school education, initiated by C. Everett Koop, M.D., Sc.D., and Surgeon General of the United States from 1981-89, was launched in St. Louis late last summer. Koop spoke to more than 360 medical students from the School of Medicine on the subject "Whither Primary Care."

A vigorous advocate of medical education reform, Koop supports strong incentives to encourage more medical school graduates and residents to enter general practice.

Koop says most young doctors do not go into primary care because medical schools do not encourage general practice. To address that issue, the School of Medicine has established a division of general medical sciences, directed by Benjamin Littenberg, M.D., within the Department of Medicine. ●

Speedy Sequencing

RESearchers studying the worm *C. elegans* have spelled out nearly 10 percent of the organism's DNA sequence, including the longest continuous DNA sequence from any organism to date. In the process, they have sequenced



Richard K. Wilson, Ph.D., (left) and research assistant Dimitrios Panussis fire up the Mark I Plus, a development platform used to work out robotics applications for molecular biology. Much of the work of sequencing now is being done by robots.

DNA faster than previously possible and uncovered three times as many genes as had been predicted, reports Richard K. Wilson, Ph.D., research associate professor of genetics and one of the project's principal investigators.

Researchers here are collaborating with scientists at the Sanger Centre in Cambridge, England, to sequence the entire *C. elegans* genome. The roundworm has six chromosomes containing 100 million nucleotides, the chemical bases that make up the genetic code. So far, the researchers have sequenced 9.2 million bases — nearly all of chromosome three and portions of chromosomes two and X — of the *C. elegans* genome.

More than one-third of the organism's genes are similar to known genes in humans and other organisms. Moreover, the researchers

continue to discover a host of "new" genes. "The most important part of the project is that we're finding a lot more previously unidentified genes than we thought we would," Wilson says.

So far, the researchers have found more than 1,800 genes, Wilson says. About 60 percent of these genes had not been previously identified. The new genes are being recorded into a computer database, which researchers will be able to search to determine if snippets of human DNA, such as a suspected cancer gene, match those in the *C. elegans* genome. When a match occurs, researchers can study the molecular and

biochemical function of the gene in the roundworm to determine its function in humans.

The Washington University researchers have developed several robotic instruments to further automate and streamline gene sequencing. The instruments will enable the lab to increase its annual sequencing capacity to more than 10 million nucleotides a year. The group plans to finish sequencing the *C. elegans* genome by the end of 1998. ●

In The Interest Of Children

RESearchers here have received a five-year, \$7.9 million grant from the National Institute of Mental Health

(NIMH) to study the mental health needs of children between the ages of four and 17.

The national project is called the Study of Service Use, Need, Outcomes and Costs for Child and Adolescent Populations (UNOCAP). It will survey children around the country to determine the incidence of mental health problems and the use and availability of mental health services for children and adolescents.

The study will be the first to deal in a structured way with children as young as four years of age. It also will be the largest to look at prevalence of mental health problems in the pediatric and adolescent populations.

Linda B. Cottler, Ph.D., associate professor of epidemiology in psychiatry, is the principal investigator for the St. Louis site. She is one of six principal investigators around the country who will work together to design the study.

The study's four primary objectives are: to identify the patterns of mental health service use and the cultural and socioeconomic factors that determine which children end up using which services; to learn the prevalence of various mental health problems and to define the need for services in both urban and rural communities; to look at outcomes for children who utilize the various types of services, and to study the economics of mental health services.

The children will be randomly selected across the age range, and interviews may be structured specifically to children in various age groups. The Washington University segment of the study will survey 3,900 children in the St. Louis area and in the Missouri Bootheel. Some 3,000 children will be chosen at random from the general population; the other 900 will be selected from six service sectors. ●

Improving Infants' Chances

A BLOOD test developed by researchers here may help improve the success of infant heart transplants.

The test provides the first method for identifying donor hearts that are likely to fail in recipients due to hidden damage in the organ. This form of organ failure, called early graft failure, is largely responsible for the 25 percent early mortality rate in infant heart transplant recipients.

The cause of early graft failure is not certain, but researchers suspect it results from damage sustained before transplantation. Hearts that undergo early graft failure do not show evidence of immune-mediated rejection but simply do not function once transplanted, says Allan Jaffe, M.D., professor of medicine.

The test measures blood levels of a protein called cardiac troponin I (eye), which is released into the blood as a result of heart cell damage. In their blinded study, the researchers evaluated the test in 19 donors whose hearts were used in 18 recipients less than one year old. Elevated levels of cardiac troponin I in a donor's blood were an accurate sign that their heart would undergo early graft failure after transplantation.

Eight donors were found to have elevated troponin I; of those, five of their hearts later underwent early graft failure. The four infants who received these five hearts died, and their deaths accounted for the only mortality in the first year after transplantation.

The investigators plan to continue evaluating cardiac troponin I in a larger group of infants. The troponin I test, which is not yet commercially available, was developed at Washington University by Jack H. Ladenson, Ph.D., professor of medicine and pathology. ●

Worldwide Access

T HE School of Medicine is undertaking a project that will make key information about the human genome available to scientists around the world.

The work will be conducted under an agreement with Merck & Co. Inc., a New Jersey-based pharmaceutical manufacturer, to fund the project. The project, which began Oct. 1, is expected to speed the finding of genes responsible for many diseases and enhance the probability of creating a new arsenal of disease-fighting drugs.

Robert Waterston, M.D., Ph.D., head of the Department of Genetics, will oversee the 18-month project, to be directed by Richard Wilson, Ph.D., at the

Genome Sequencing Center.

The project involves partially decoding snippets of human DNA that orchestrate the production of thousands of human proteins. Merck will provide the DNA, and Waterston and his co-workers will spell out the sequence of the DNA fragments. The full sequence would tell researchers which protein a gene produces. The partial sequence is the first step in finding the genes that need to be completely sequenced to develop a use for the proteins they encode.

All molecular sequences uncovered during the project will be delivered to a computer data bank called GenBank, operated by the federal government's National Center for Biotechnology Information in Bethesda MD. The database is accessible to all interested researchers. ●

X Gets \$12.8 Million Grant

D AVID Schlessinger, Ph.D., professor of medicine, genetics and molecular microbiology, has received a \$12.8 million grant from the Center for Human Genome Research at the National Institutes of Health to continue his work with the Human Genome Project.

The consortium already has identified the location of several hundred genes on the X chromosome. The next phase of Schlessinger's project will involve constructing a complete map by combining several X chromosome maps — each providing a different kind of information — into a single high-resolution map.

Nearly half the X chromosome genes found so far appear to be

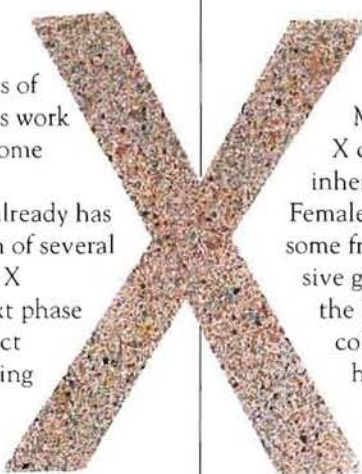
disease-related, including genes for Duchenne muscular dystrophy and retinitis pigmentosa. There is considerable scientific interest in the X chromosome because of its link to

a number of diseases and its characteristic inheritance pattern.

Males have only a single X chromosome, which they inherit from their mother.

Females inherit one X chromosome from each parent. Recessive genetic diseases linked to the X chromosome, such as color blindness and hemophilia, show up in males who carry only one copy of the defective gene.

The second phase of Schlessinger's project involves spelling out the molecular sequence of selected pieces of the X chromosome. ●



Attacking Asthma

Intervention Identifies Disease Triggers:
Cockroach Allergen, Dust Mites And Others



by Holly Edmiston

Children with asthma are breathing easier as a result of a study that teaches them and their families what triggers asthma attacks and what can be done to prevent them.

More than 3,000 children in the United States die every year from bronchial asthma, a chronic lung condition marked by breathing difficulty and wheezing. However, research at the medical school indicates that death and suffering can be prevented with appropriate intervention.

Many children with asthma have factors in their environments that can set off or sustain an asthma attack; such factors are called asthma triggers. The study underway here shows a connection between asthma in inner-city children and many of these triggers, the most prevalent of which is cockroach allergen. The role of cockroach allergen as one of the chief causes of asthma has been strongly suggested by prior research done elsewhere.

"Our research has shown the correlation is much greater than anybody ever envisioned," says H. James Wedner, M.D., chief of clinical allergy, division of allergy and immunology at the School of Medicine. "More children who reside in the inner city are sensitive to cockroach allergen than to that of the house dust mite."

Wedner and his colleagues at the Medical Center, in conjunction with researchers from Saint Louis University, are examining childhood asthma and its causative factors as part of the National Cooperative Inner City Asthma Study. The two-phase, \$16 million project is sponsored by the National Institute of Allergy and Infectious Disease (NIAID) and includes seven other medical centers from across the eastern United States.

Wedner says the morbidity and mortality of asthma have increased within all groups of asthmatics in the United States every year since 1979. Of the 10 to 12 million Americans who suffer from this disease, more than 6,000 die each year. The populations in which asthma has shown the greatest rise are African-Americans, Latin-Americans and inner-city children.

Earlier investigations were narrow in scope and simply looked at the direct correlation between asthma and

cockroaches. In this study, more than 600 homes in eight inner-city areas were surveyed, and 1,589 children were evaluated to determine what factors contribute to the asthma of inner-city children.

"Nonetheless, the early research was valuable in pointing to cockroach allergen as a major component in the asthma of inner-city children, a finding many studies since have confirmed," Wedner says.



H. James Wedner, M.D., investigates the relationship between allergens and asthma.

Gathering Evidence

During the first phase of the study here, 211 children were evaluated at Washington University. Recruited from local emergency rooms and clinics, the subjects ranged from four to nine years of age. The research team included two physicians, two project coordinators, two interviewers and support staff.

Children and their primary caretakers were interviewed at length about economic circumstances, psychosocial and cultural values,

problem-solving skills, medical care access and adherence to medical care regimens. Skin and pulmonary function tests also were performed on the asthmatic children.

In addition, the research team looked at demographics — residence, current body weight, birth weight and whether the child required intensive care at birth. Information about cigarette smoking also was considered, such as the number of people in the family who smoke and, most importantly, whether the primary caretaker smokes.

To conduct environmental surveys of the study participants' homes, researchers used hand vacuums to collect dust samples from a one-square-meter area in each of three rooms — the kitchen, the TV or family room and the asthmatic child's bedroom. They then assayed the dust for the amount and type of allergens present.

"All of these factors were brought together in an attempt to ask a simple question that has a very complicated answer," says Wedner. "And that is, 'Is there a single factor or small group of factors that one can define as being importantly related to asthma in the inner city?' The answer is no, which is not surprising, because I think those of us who felt that maybe there would be a commonality of factors were very naive."

Instead, the elements that correspond with asthma morbidity in the inner city vary from one child to another, he says. Each child in the study has one or more factors contributing to his or her asthma.

"Child 'A' has heavy infestation of his house with cockroaches and is allergic to cockroach allergen. Child 'B' doesn't have infestation or sensitivity to cockroach allergen, but his family has problems with adherence to medical care regimens, and they don't

have a doctor. Child 'C' has family problems. In each case there seems to be a constellation of difficulties which can be defined," Wedner says.

Cleaning House

All of the first phase findings were considered in developing an intervention to treat asthmatic children. The heavy presence of cockroach allergen discovered during the environmental surveys led researchers to focus on its role and the eradication of cockroaches as a major part of the intervention.

"Many of the children are living in cockroach-infested homes, and they're allergic to cockroach allergen," says Wedner. "We ought to do something about that."

Presently, Washington University is studying 60 children in an active intervention group along

with 60 children in a comparison group, all ranging in age from five to 11 years. Altogether, 480 children are being evaluated in both intervention and control groups.

At the beginning of the intervention phase, researchers again conducted in-depth individual interviews as well as skin and pulmonary function tests. The data obtained was used to develop an Asthma Risk Assessment Tool, or ARAT, which the project team uses to target individual problem areas for each asthmatic child in the study.

During group discussions, families learn about allergies, the asthmatic's susceptibility to cockroach and other allergens and what to modify in their homes to keep the environment as allergen-free as possible.

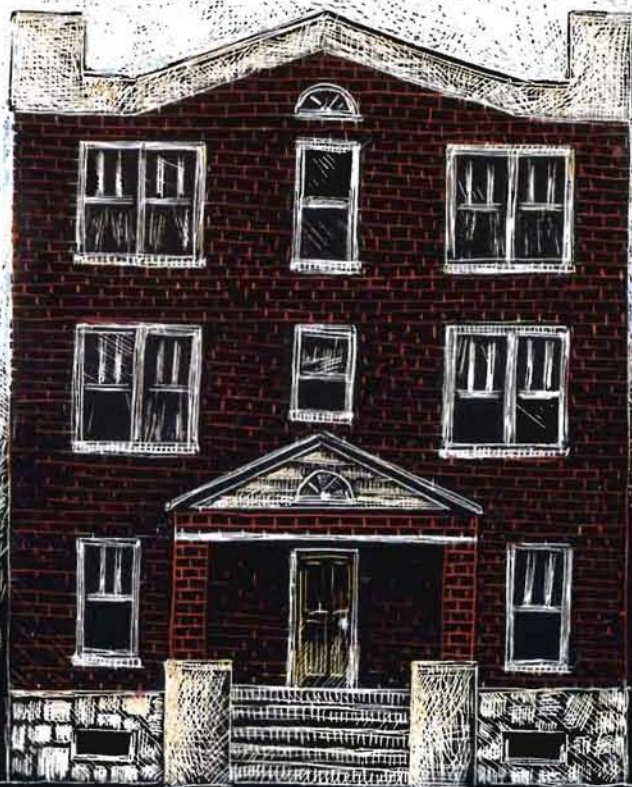
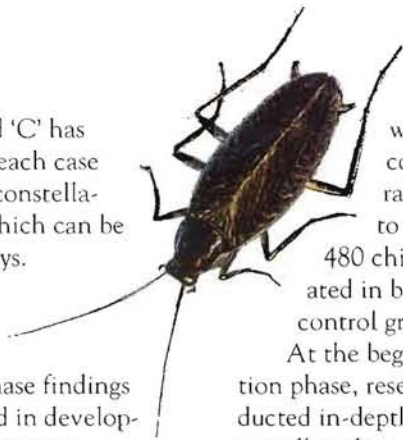
The children meet separately with an asthma counselor. As part of

interactive storytelling sessions, they remove common asthma triggers — such as a dog or cat, spray products or cockroaches — from the bedroom of a model house. The step-by-step process is designed to empower the children, giving them an understanding of how they can control the effect asthma has on their lives.

According to Wedner, the value in teaching asthmatic children to recognize and remove these asthma triggers from their bedrooms, even if allergens remain throughout the rest of the home, is immediately measurable.

"If children sleep eight hours a night, they spend one-third of their lives in one room in one building. Major changes in their bedrooms make a big, big difference," says Wedner. "So we tell our kids and our families, 'First, concentrate on the bedroom. Once you've done that, then focus on the rest of the house.'"

The study's asthma counselor, Roosevelt Peabody, is a social worker who helps



children and their families gain confidence in their ability to control asthma. He teaches them to focus on issues that affect the health of asthmatic children, such as how to communicate more effectively with the medical and educational systems and awareness of the importance of having a medical plan. Such skills help parents and children feel more in control of the often frightening symptoms of asthma.

"The rewards of this work are gratifying," says Peabody. "These parents are at their wit's end — they're relieved to have somebody working with them who understands what they're going through."

In addition to intensive counseling, the study provides direct, tangible assistance to families, from issuing pillow and mattress covers and

giving referrals to appropriate social service agencies to providing cockroach extermination.

"We hope to show that intervention can reduce problems of asthma in the inner city," says Peabody, "and maybe to serve as a springboard for other funding to continue helping asthmatics and their families."

Breathing Easier

Families dealing with asthma often feel they are the only people in the world who have this chronic problem," says Wedner. "The object of intervention is to provide them with something portable, skills that will help them eliminate asthma triggers from their homes and lives.

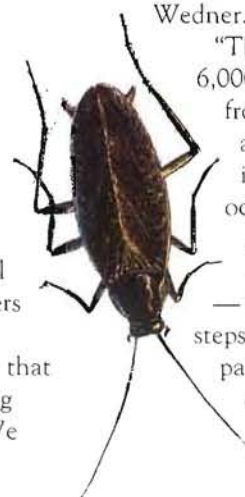
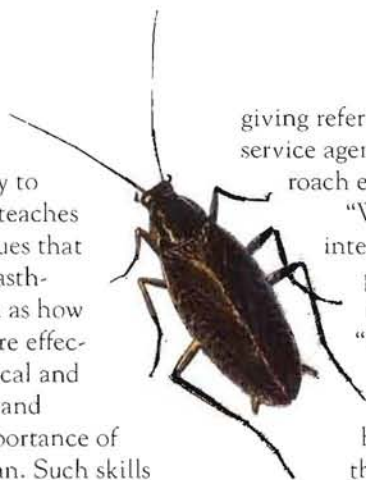
"We need to convince people that this work is the trade-off for feeling better," says Wedner. "We want to give these

families hope. We tell them, 'You deserve a better life, go to whatever length necessary to get it.'"

In addition to the physical and psychological misery asthma creates, its treatment costs Americans an estimated \$6.2 billion annually. Successfully controlling asthma results in decreased medical expense as well as fewer school and work days missed. "Small changes can make a large change economically," says Wedner.

"There are more than 6,000 unnecessary deaths from asthma each year, and the most rapid increase in deaths has occurred among inner-city children," he adds.

"Kids don't have to die — families can take simple steps to alleviate much of the pain and discomfort of this disease. Many of us believe no one should die from asthma." ●



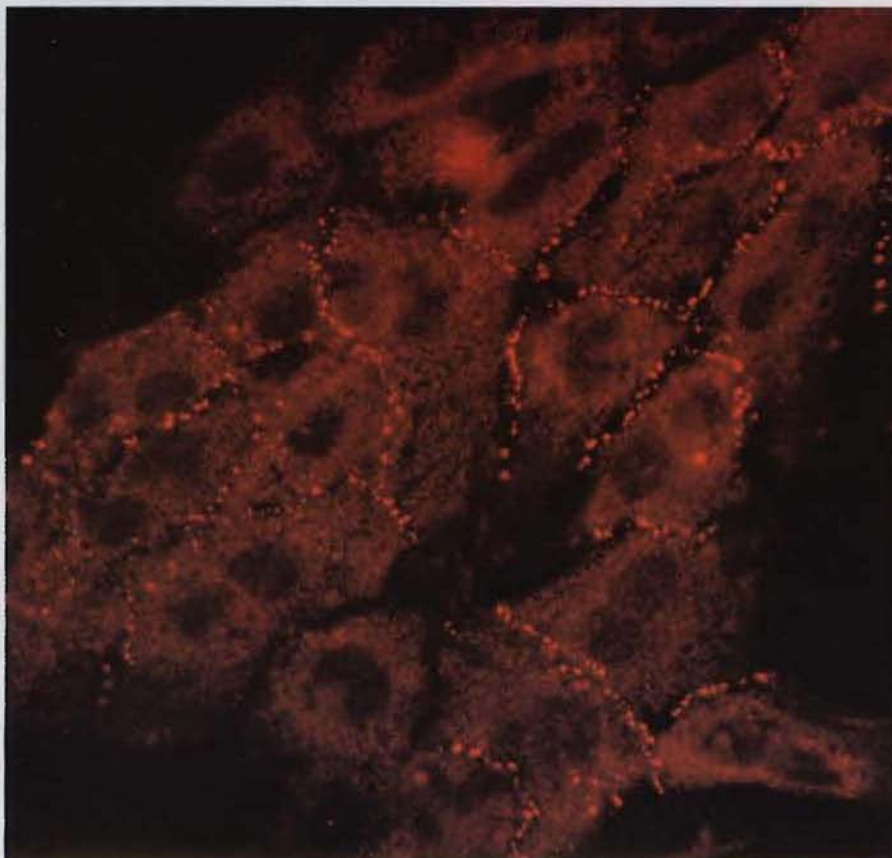
The heart beats 100,000 times every day, its steady rhythm achieved through careful control exerted by electrical signals. Disturb these signals, and the result is an arrhythmia, a life-threatening disorder in which the heart beats so erratically that it cannot pump blood properly. Arrhythmias are among the most common causes of death, claiming hundreds of thousands of lives every year in this country alone.

Medical researchers have made strides toward understanding arrhythmias; they know which patients are at risk and have devised ways to spot areas of the heart where trouble arises. What they have lacked is an explanation for why the electrical disruptions occur in the first place — information that is critical to developing effective therapies.

by Juli Leistner

ACROSS THE

Communications Of The Heart



Gap junctions in cultured heart cells appear as tiny "spot welds" at the edges. Researchers use the cells to measure current conductivity, the expression of proteins critical to electrical communication and the remodeling mechanisms of gap junctions after damage to the heart.

Jeffrey Saffitz, M.D., Ph.D., and his colleagues at Washington University think the answer to this fundamental question lies in a component of the heart's electrical conduction system: tiny channels called gap junctions. The investigators' work is building a framework for understanding how electricity moves through the heart, how the heart controls that movement and how disease can disrupt it. Their findings are leading to new insights into the causes of arrhythmias.

They also may open the way to better treatments.

One key to proper heart function is good communication on the smallest of levels, says Saffitz, professor of pathology. For every heartbeat, an electrical impulse must be generated, then travel in a wave through every muscle cell in the heart — a wake-up call that tells each cell to contract. The current is generated by the movement of charged particles called ions. "The heart has to pass that

current from one cell to the next cell and to the next and so on, all in a coordinated and coherent fashion," he explains.

The signals travel through gap junctions, tiny bundles of channels that link one cell to its neighboring cells. Each gap junction holds anywhere from tens to thousands of channels. They serve as express routes through the heart to help the signals move as quickly as possible. A fast route is necessary because the heart is so densely packed with cells — more than 45,000 in every cubic millimeter, Saffitz says.

Arrhythmias occur when these electrical signals are disrupted. There are many different forms of arrhythmia, some more serious than others. Saffitz' work applies largely to one of the most common and deadly forms, ventricular arrhythmia, which affects the heart's two lower chambers. It is responsible for 400,000 deaths every year in the United States. Its usual scenario: The signals in one area of a ventricle become blocked or travel too slowly, and their timing gets out of sync with signals in the rest of the heart. Under certain conditions, these errant signals can set off contraction in one area that is not coordinated with the cycle of contraction in the rest of the organ.

"So the heart suddenly stops beating in a coherent way and begins beating either very rapidly or very chaotically," Saffitz explains. "The functional result is that blood is not pumped properly to the vital organs such as the brain, and the person loses consciousness and collapses. Unless the rhythm disturbance is corrected quickly, the person dies."

Arrhythmias most often occur in people with cardiovascular disease; in fact, sudden death from ventricular arrhythmia is often the ultimate cause

GAP



Jeffrey Saffitz, M.D., Ph.D., investigates the relationship between structure and function in gap junctions using the electron microscope as one of his tools.

of death in this group. Their high risk is thought to stem from structural changes that occur in the heart in response to the physical stress imposed by disease. Regardless of the malady — coronary artery disease, heart attack, high blood pressure, congestive heart failure or faulty valves — the heart has one standard reaction: its cells become bigger and try to contract more forcefully; the heart's chambers become larger, and its walls often become thinner.

"A number of clinical trials suggest that though these changes are designed to deal with injury, their long-term consequences are detrimental in terms of the heart's mechanical function, and probably in its electrical activity as well," Saffitz says.

In the quest to understand the cause of arrhythmias, researchers have made the most progress in studying heart attack patients. This group is known to develop a latent potential for arrhythmias after recovering from an attack. Pioneering techniques developed in the early 1980s by Washington University investigators Peter Corr, Ph.D., (now at Monsanto-Searle) and James Cox, M.D., professor of surgery, among others, have made it possible to map out electrical circuits in the heart and to pinpoint the spots at which abnormal circuits

originate. Using these and other techniques, researchers have learned that in heart attack-related arrhythmia patients, electrical current moves slowly and haphazardly near areas of the heart damaged by an attack.

It was initially thought that this abnormal conduction was the result of problems with ionic currents, the electrical changes that occur inside each individual heart cell to cause it to contract. But further investigation found little to be wrong with these currents.

"If there was nothing wrong with the way current moved within individual cells, but current still moved through the heart abnormally, that meant that the defect had to lie in current transfer between cells," Saffitz explains. He and others began to suspect gap junctions were an important factor in arrhythmia.

His lab began studying gap junctions in the mid-1980s. Though the basic function of gap junctions was understood at that time, many details were not clear: How many are in each cell? How are they distributed among the millions of heart cells? How does their arrangement affect heart function? Saffitz began looking at these questions through the eyes of the pathologist: the microscope. His group developed sophisticated microscopy

techniques to take the first detailed look at gap junction distribution in the heart. They found it to be extraordinarily complex.

"The first few years of our work were devoted just to coming to grips with how complicated this communication system is," Saffitz says. They have learned that every ventricular cell is connected to roughly 11 neighboring cells by hundreds of gap junctions. In addition, the various tissues that make up the heart tend to have their own characteristic, three-dimensional pattern of gap junction connections. "We think of it almost like an architectural blueprint of how cells in each tissue connect to their neighbors," he explains.

With that information in hand, they began looking at how this structure might change in response to damage from a heart attack. Their studies in animals show that after a heart attack, the number of gap junctions drops dramatically, that each cell is connected to half as many



The spatial arrangement of gap junctions influences the conductive properties of tissue. In the top image of normal ventricle, the cells' pattern of joining is apparent. In the bottom image, selected from an area in which arrhythmia occurred, the packing arrangement has been selectively disturbed by scar tissue.

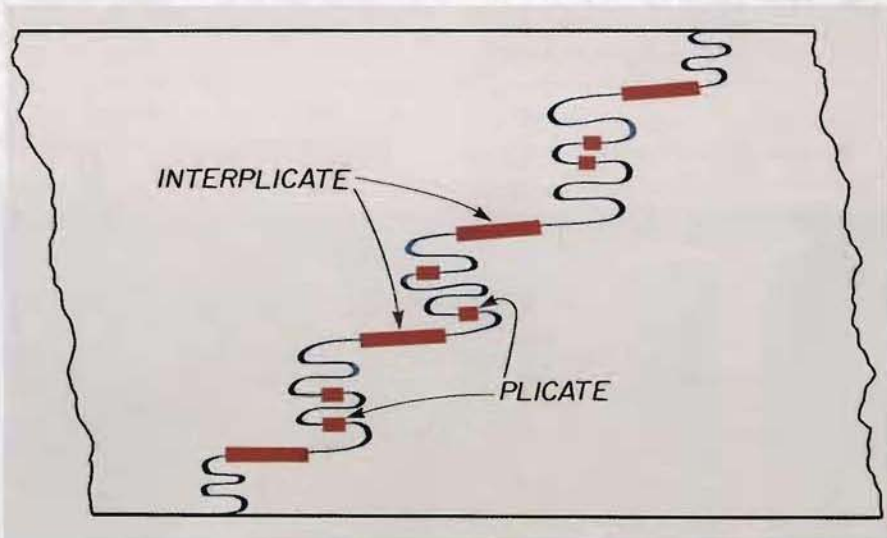
neighbors as before and that more connections are lost in certain orientations than in others. The functional result is that electrical signals lose their usual direct pathways through these areas of the heart and are forced to zigzag their way through.

The findings seem to explain the slow conduction found in heart attack patients; the logical assumption is that the same alterations in gap junction connections also happen in human heart attack patients and that they are at least partly to blame for arrhythmia, Saffitz says.

Collaborations with molecular biologist Eric Beyer, M.D., Ph.D., associate professor of pediatrics, over the past six years have allowed the investigators to zero in for a closer look at gap junctions. By combining interests — Saffitz' in structure-function relationships and Beyer's in gene expression — the team has painted a more complete picture of how gap junctions work. They have found that gap junctions in the heart are composed of three different proteins, called connexins. Beyer's laboratory has cloned and sequenced the genes for the cardiac connexins called Cx43, Cx40 and Cx45. In addition, Saffitz' antibody-based tests have revealed that various heart tissues use distinct combinations of these proteins to form their gap junctions.

Why the heart needs a variety of connexins is not clear, but they play a role in regulating electrical conduction, Saffitz says. Researchers already know that different tissues in the heart have characteristic electrical properties. "We think that the specific conduction properties that each one of these components of the heart exhibits is determined — at least in large part — by the architectural blueprint of the connections among cells and also by the kinds of connexins that each tissue uses," Saffitz says.

Researchers are currently performing studies in tissue culture to see how altering the protein makeup of gap junctions might affect electrical properties of heart tissue. They would also like to know whether this composition is changed by disease, just as the "blueprint" is changed; if so, this might



In heart tissues, large gap junctions (marked interpligate) ensure the efficient transfer of electrical current. Smaller (plicate) junctions occur in regions of mechanical adhesion and function in aspects of cell-to-cell communications.

be another factor that contributes to arrhythmia, Saffitz says.

The information being pieced together may lead to improving treatments for ventricular arrhythmias. Currently, there are two options, both of which have drawbacks. Some patients are implanted with devices called defibrillators, which monitor heart rhythm and deliver a tiny jolt of electricity whenever an abnormal rhythm develops. "They can be effective, but they are also very expensive and involve surgery, so they are just not a practical solution to the thousands of people who are potentially at risk for arrhythmia," Saffitz says. Although drugs are available, they are not always effective, and they carry side effects.

The most attractive possibility for improving treatment lies in designing new drugs. It is possible that researchers will be able to take advantage of the varied composition of gap junctions to develop drugs targeted at a specific problem. The first step is to learn what factors control the arrangement and composition of gap junctions and to find out how those factors influence electrical conduction, Saffitz says.

"It is just a matter of time before we understand the mechanisms that regulate channels. As soon as we do, it will be possible to use rational drug

design strategies to target those regulators selectively," Saffitz explains. With drugs that act only on one type of protein or one type of channel, for instance, "we might be able to change the heart rate without changing the pattern of current spread, or to change the pattern of spread in one part of the heart but not another. I think this is all conceivable," Saffitz says.

One example of such a strategy might be to develop a pharmacological version of a surgical technique now being used to cure another common form of arrhythmia, called atrial fibrillation. Developed by Cox, the "maze procedure" involves making a maze-like pattern of incisions across the heart to cut off the specific electrical pathways that lead to atrial arrhythmia. "In the future, it might be possible to pharmacologically remodel gap junction conduction pathways in the ventricles in the same way that Dr. Cox is remodeling pathways in the atria with his knife," Saffitz explains.

It may not be long before such drugs are a reality. "Judging from the pace of advancements, I think it's going to be a very achievable goal," he says. "I expect that this will happen during my professional lifetime. I hope it will." ●

B E Y O N D

PSA

In July 1988, with deaths from prostate cancer continuing to rise, physicians gathered at a National Cancer Institute retreat in Maine to discuss new strategies for detecting the disease and lowering its death rate.

The gold-standard rectal exam, the experts acknowledged, misses too many tumors while they are still curable. In fact, 70 percent of cancers detected by digital rectal exams are considered incurable because they

A FURTHER UNDERSTANDING OF PROSTATE CANCER

by Caroline Decker

have spread beyond the prostate.

During the meeting, William J. Catalona, M.D., head of the division of urologic surgery, proposed a novel idea. He suggested that a blood test already being used to monitor prostate cancer patients for recurrence could be a useful screening tool for early cancer detection. "I was kind of howled down by everyone in the room," Catalona recalls. "No one thought it would work."

Catalona proved his detractors wrong. In large-scale studies involving thousands of men, he since has demonstrated the superiority of the prostate specific antigen (PSA) test. The test measures blood levels of PSA, a protein produced exclusively by the prostate. Elevated levels can be an indicator of cancer.

Catalona's studies led, in part, to the recent U.S. Food and Drug Administration's approval of the PSA test for prostate cancer detection in men over the age of 50. The agency's endorsement "means a lot," Catalona says, because the idea that a simple blood test could diagnose cancer has been controversial.

More than 28,000 men now are enrolled in Catalona's PSA studies. His ground breaking research has prompted thousands of older men to include the PSA test as part of their annual health checkup.

But Catalona's work is not over. Researchers do not know the causes of prostate cancer, the number two cancer killer of American men. Physicians lack effective ways to treat the disease once it has spread beyond the prostate. And while the PSA test has revolutionized the early diagnosis of prostate cancer, its high rate of false positives has scientists searching for better ways to interpret the test.

Faced with those uncertainties, Catalona and his co-workers are exploring artificial intelligence to more accurately diagnose prostate cancer and to predict which patients are likely to experience disease recurrence. They are collaborating with the National Cancer Institute to develop immunotherapy for treating prostate cancer. And armed with a large amount of patient data from his PSA studies, Catalona and Helen Donis-Keller, Ph.D., professor of

surgery, are searching for the elusive prostate cancer gene(s).

"I've always been very interested in finding a way to make the situation better for men with prostate cancer,"



William J. Catalona, M.D., answers a question for his patient, Lawrence Franchetti, who was in St. Louis for a six-month checkup following prostate surgery. Franchetti's cancer was identified by the PSA test.

Catalona says. "The PSA studies have dramatically changed the outlook for many patients. But we can't stop there."

Artificial Intelligence

Catalona's screening studies have demonstrated that the PSA test is a more effective screening tool than either rectal or ultrasound exams. The studies also show that cancer detection is most effective when patients receive both a PSA test and a rectal exam. Together, the tests detect 70 to 85 percent of all cancers before they spread beyond the prostate.

But the usefulness of the screening tests continues to be debated among medical experts because the tests have high rates of false positives and false negatives. On the average, for every three patients who undergo a prostate biopsy because of abnormal screening tests, only one patient is found to have cancer.

Catalona and his co-workers are hoping to improve those odds with artificial intelligence. The investiga-

tors, working with Peter Snow, Ph.D., a scientist with Kaman Science Corporation of Colorado Springs, have developed a computer program that uses artificial intelligence to predict

whether a patient has prostate cancer even before a surgeon performs a biopsy. The program also predicts — prior to surgery to remove a prostate tumor — whether a patient will experience disease recurrence.

A prototype of the program is far more accurate than physician judgment, Catalona reported in the November issue of the *Journal of Urology*. In a pilot study, the investigators entered medical information into the computer about patients whose outcomes were already known. The program predicted prostate biopsy results with 87 percent accuracy and prostate cancer recurrence with 90 percent accuracy.

Physician judgment, which is largely based on results of prostate cancer screening tests, can predict biopsy results with only 35 percent accuracy. Currently, there is no way to accurately predict which patients will experience cancer recurrence.

"We were stunned by the results, because they are much more accurate than physician judgment," Catalona says.

The computer program relies on a trained neural network to make its predictions. By imitating the way the brain processes information through its vast array of neurons, a neural network can be taught to recognize complex patterns in data. It is able to learn from experience and can generate a correct diagnosis and, in this case, a correct prognosis, even if some pieces of information are missing or misleading, as is often the case with prostate cancer.

To predict biopsy results, the investigators trained the neural network by entering medical informa-

tion into the computer from a group of 1,578 men who had participated in the PSA study and who each had at least one abnormal PSA test. The information included patient age, race, PSA levels, rectal exam findings, ultrasound results and biopsy results.

The researchers then tested the network's ability to predict biopsy results by entering into the computer the same medical information — except biopsy results — from each of 209 men who had also participated in the PSA study.

The network's positive predictive value — the chance that a positive result means cancer is present — was 73 percent, and the negative predictive value — the chance a negative result means cancer is not present — was 94 percent.

"The network is not based on theory," Catalona explains. "It is entirely empirical. The more information you give it, the smarter it gets."

The researchers then trained and tested the neural network's ability to predict cancer recurrence following radical prostatectomy surgery by entering medical information into the computer from a group of 240 men who had undergone the procedure. The network's positive predictive value was 100 percent and the negative predictive value was 88 percent.

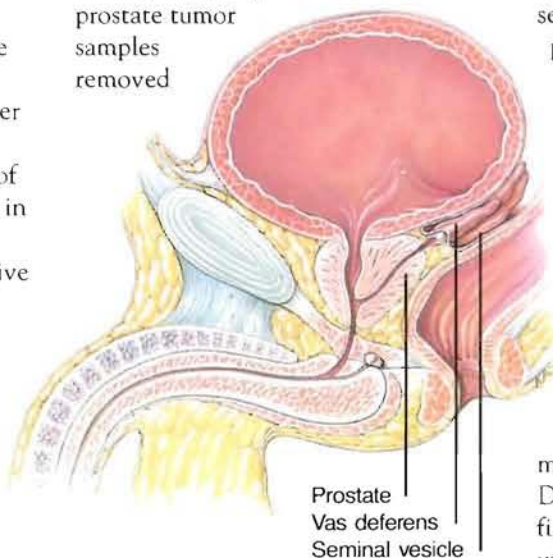
While further testing of the neural network is necessary before it can be used in physicians' offices, it one day may save healthcare costs by reducing unnecessary biopsies and unnecessary or ineffective treatments for prostate cancer patients who will experience disease recurrence, Catalona says.

Genetic Studies

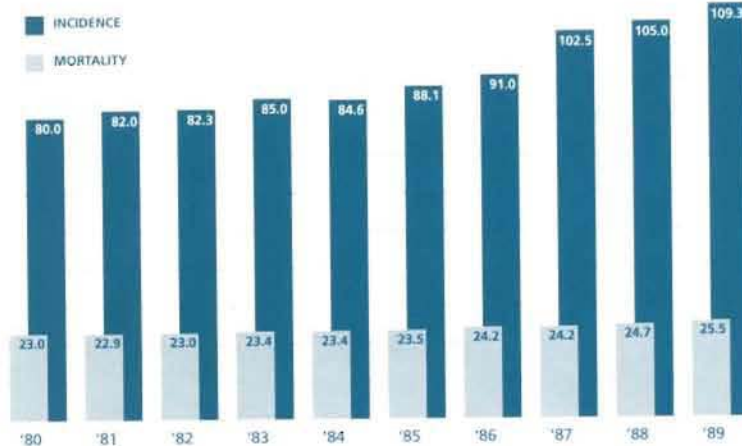
During the course of his PSA studies, Catalona has amassed one of the largest prostate cancer databases in the world. The database includes medical information and tumor and

blood samples from more than 1,000 men with prostate cancer. In a project led by Donis-Keller, the investigators are searching for the gene or genes involved in triggering prostate cancer.

By analyzing prostate tumor samples removed



The prostate gland — about the size and shape of a walnut — consists of a median lobe and two lateral lobes; it surrounds the neck of the bladder and the urethra in the male.



The incidence and mortality of prostate cancer among U.S. men, per 100,000.

from patients during surgery, Donis-Keller and her co-workers are comparing the content of damaged DNA found in each tumor with that of "normal" DNA found in the patient's blood. The researchers are examining the tumor DNA for chromosomal deletions, which pinpoint the location

of tumor suppresser genes. These genes play a critical role in keeping cell growth in check. The loss of function of a tumor suppresser gene is believed to initiate prostate cancer.

That information has led researchers to focus their search on a portion of chromosome eight. "In a large proportion of DNA tumor samples we've looked at, we've seen a region of chromosome eight that has been lost," Donis-Keller says.

Additional tumor samples are used to narrow the search for the missing region of DNA so that the researchers can construct a physical map of that area and start the gene identification process.

With recent advances in molecular biology and gene mapping, Donis-Keller predicts researchers will find prostate cancer genes within two years. The gene hunt will be intensely competitive, she says. Scientists from many prominent research institutions, including the University of Utah, Baylor College of Medicine and Johns Hopkins University, are searching for the prostate cancer genes.

Once the genes are discovered, Catalona says it may be possible to identify people who are genetically susceptible to the disease before symptoms develop. Those patients then could be monitored closely for the development of prostate tumors.

The genetic studies also will enable the researchers to document the molecu-

lar changes that determine the progression of prostate cancer. One of the dilemmas that hampers diagnosing the disease is that it can be difficult to predict whether a tumor will be aggressive or relatively benign.

Donis-Keller hopes the identification of genes involved with cancer progression will help physicians better predict the disease's course. "In the future, this should ultimately lead to improved therapy," she says.

Immunotherapy

Radical prostatectomy surgery and radiation therapy can be successful treatments for prostate cancer patients whose tumors are confined to the prostate. Unfortunately, no effective therapy now exists for men whose cancers have spread beyond the prostate.

Catalona's research team is working to brighten the outlook for patients whose cancers have spread by capitalizing on the immune system's ability to sabotage foreign invaders.

In a collaborative project led locally by Timothy Ratliff, Ph.D., associate professor of surgery, the School of Medicine is teaming with researchers at the National Cancer Institute to develop a cancer vaccine that will boost the ability of the body's immune system to destroy prostate tumors.

Though the research is still in its early stages, the scientists hope to target the vaccine to antigens uniquely expressed within the prostate, such as PSA or prostate specific membrane antigen (PSMA). Both antigens are also expressed within prostate cancer cells.

"This type of immunotherapy is an up-and-coming form of therapy for tumors that have unique antigens," Ratliff says. "We propose to develop a vaccine that will target those antigens and elicit an immune response that will be therapeutic."

The vaccine will include snippets of DNA from one of the unique prostate antigens. Once injected, the researchers hope the immune system will recognize the antigens and initiate

are able to recognize and destroy antigens unique to prostate tumors.

Once isolated, the scientists will use immunodeficient mice injected with human prostate cancer cells and

immune system cells to test whether the vaccine can trigger an immune response.

Catalona's PSA studies continue to contribute to a greater public awareness about prostate cancer. While his critics point out that there still is no proof that the PSA test actually saves lives, Catalona says, "Common sense will tell you that if you detect cancer earlier and treat it aggressively, you're going to have fewer cancer deaths."

So he continues to collect survival and mortality data from his patients enrolled in the PSA studies. The studies that result will be published in the next five to 10 years, and Catalona has confidence that they will prove him to be right again.

In the meantime, he says with authority, every man over the age of 50 should get an annual PSA test and a rectal exam. African-American men, who as a

T I M E T E S T E D

Studies led by William J. Catalona, M.D., have helped establish the PSA test as an important screening tool for prostate cancer. The test detects elevated levels of prostate-specific antigen, a protein produced by the prostate and a possible indicator of cancer. Important studies include:

New England Journal of Medicine, 1991. A study involving 2,000 men found cancer in 22 percent of those with slightly elevated PSA levels and 67 percent of those with high PSA levels. If digital rectal exams alone had been used, 32 percent of cancers would have been missed. Cancer detection was most effective when both tests were used.

Journal of the American Medical Association, 1993. A study involving 10,000 men found the PSA test, compared with the digital rectal exam, nearly doubles the percentage of cancers detected while they are still curable. Seventy-one percent of cancers detected by routine PSA screening were organ-confined compared with 43 percent of cancers detected by rectal exam alone. The researchers also noted that the PSA test detects serious, aggressive cancers as opposed to insignificant cancers that are not life-threatening.

Journal of Urology, 1994. A multicenter study involving 6,630 men found the PSA test detected more tumors and more organ-confined tumors than the digital rectal exam. Using both methods increased detection of organ-confined cancers by 78 percent, compared with the rectal exam alone. If physicians had relied on suspicious ultrasound results to perform a biopsy, nearly 40 percent of cancers would have been missed. ●

a localized immune response to destroy the prostate tumor.

Researchers at the School of Medicine and the NCI are currently growing human prostate tumors in the lab and isolating immune system cells — cytotoxic T lymphocytes — that

group have a high incidence of prostate cancer, and men with a family history of the disease should begin getting annual PSA tests and rectal exams beginning at age 40. ●

Seeking Relief

Thirty-one-year-old Dale Lenz thought he was having a heart attack one day at work in January 1993 when a burning, bloated feeling filled his chest and broke his concentration. Thinking he could walk it off, he rose from behind his desk, took a stroll around his Belleville IL office and practiced deep breathing. Some 30 minutes later, the symptoms subsided.

A visit to the local hospital's emergency room allayed his initial fears of heart attack, but the disruptive sensations persisted and worsened. When the attacks hit, every waking minute, for 14 hours a day, a fiery burn bathed his insides from his throat down through his chest. At night, the same pain preempted sleep and left Lenz with a sour taste in his mouth.



Dale Lenz has resumed jogging since laparoscopic surgery corrected his chronic problem with gastroesophageal reflux. The condition, which persisted for more than a year, forced Lenz to give up all physical activity.

by Kleila Carlson

Several such episodes later, and after repeat trips to the hospital ER — where Lenz was given echocardiograms and nitroglycerin tablets for symptoms of heart attack — it finally was determined that he suffered from gastroesophageal reflux, a common problem that occurs when stomach contents and acids escape through a faulty lower esophageal sphincter valve and ascend into the esophagus.

Experts say most of the 61 million Americans who suffer reflux can control their distasteful symptoms with antacids or medications. But Lenz, who spent months taking over-the-counter Maalox Plus and the gamut of prescription drugs such as Zantac, Pepcid, Prilosec and Propulcid, was among the roughly 5 percent of people whose condition is so severe that only surgery can provide relief.

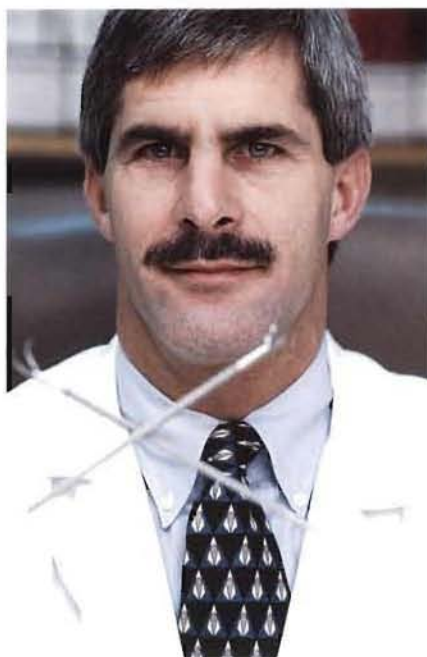
"Some people can live with the symptoms and other people, like me, aren't able to," says Lenz, whose problem was corrected with a new, minimally invasive surgical procedure being performed by Nathaniel J. Soper, M.D., associate professor in the Department of Surgery.

The procedure, known as laparoscopic Nissen fundoplication, is an updated version of the standard open Nissen fundoplication operation that requires a lengthy hospitalization and four- to six-week recuperation. With the new technique, performed through a laparoscope, patients usually are out of the hospital in two days and back to work within 10 days.

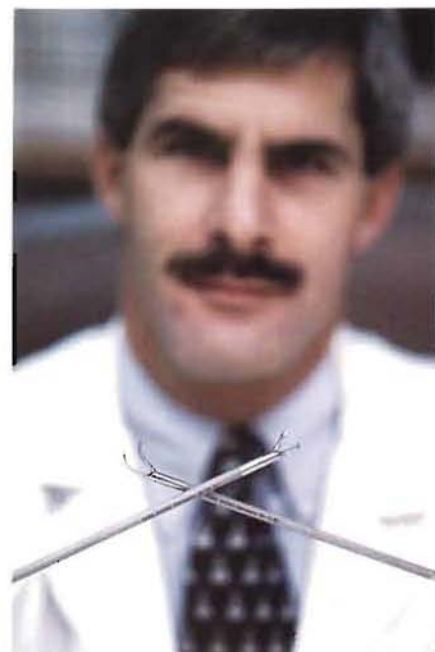
"Over the last couple of years we have developed the ability to perform a standard operation, previously done through a large incision, using a laparoscope," says Soper. "Instead of a long incision and using retractors to lift up the rib cage and stretch the abdominal muscles, which makes recuperation very painful, we make five small incisions and use long, narrow instruments to do the same operation. There is much less pain, and patients go back to work at about the same time they would be going home from the hospital with the open operation."

The Root Of Reflux

Nissen fundoplication was designed by a Swiss surgeon about 40 years ago and has been the standard therapy for gastroesophageal reflux by general surgeons. In the procedure, the upper part of the stomach, called the fundus, is freed from the surrounding tissue, wrapped around the lower part of the esophagus and sewn to itself to make a sort of "ox yoke" around the lower esophagus. This wrap buttresses the lower esophageal sphincter valve, which



cases, reflux is relatively mild, with some regurgitation, heartburn and belching. The vast majority of people do not need an operation. Many people do quite well with antacids alone."



In focus: left, Nathaniel J. Soper, M.D., and right, the endoscopic instruments he uses in a minimally invasive version of a surgical procedure that halts the reflux of stomach acid into the esophagus.

remains intact. When stomach pressure rises the wrap pinches down, recreating the valve-like effect.

Soper says a weak or abnormally relaxed lower esophageal sphincter is what causes reflux in the majority of patients. When it is working correctly, the one-way valve at the bottom of the esophagus opens to allow food into the stomach and then slams shut after it is in.

The problem is most common in newborns and then again with aging. "With newborns, we think that the sphincter probably is not mature; as people age, sometimes the valve breaks down or other mechanical problems result, allowing the stomach to ride up into the chest," Soper says. "In most

The mainstay of therapy has been to neutralize the stomach contents with over-the-counter antacids and prescription drugs, which can be costly. Some prescription medications cost as much as \$5 a day and may have side effects with extended use. And while these medicines neutralize stomach acid and diminish some of the symptoms people have, Soper says they do not stop reflux of stomach and duodenal contents, such as bile.

"Some people continue to have regurgitation of food and stomach acids, and this can lead to serious problems," he says. "Sometimes, the reflux can go down the airways and cause aspiration pneumonia or asthma. More serious complications of extended contact with acid include ulcers of the esophagus, internal

bleeding, scarring or narrowing of the esophagus with difficulty swallowing and changes of the esophageal lining that can lead to cancer.

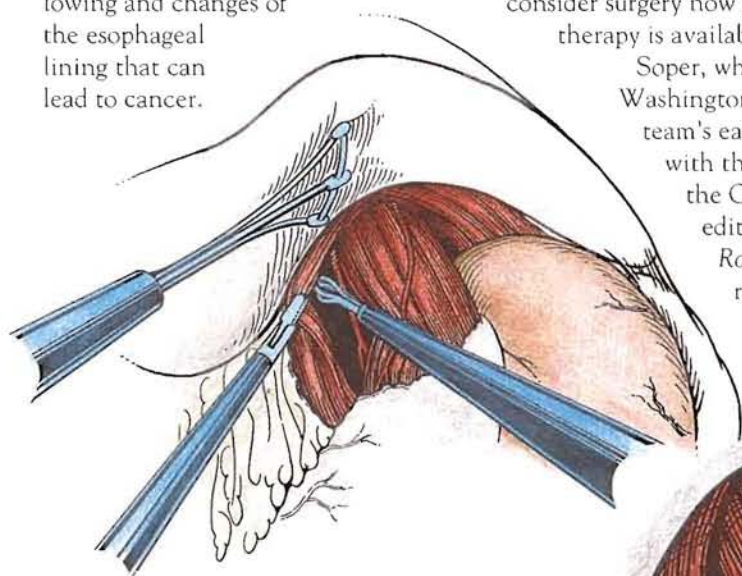
operate, but I think physicians and patients are much more willing to consider surgery now that laparoscopic therapy is available."

Soper, who described the Washington University team's early experience with the technique in the October 1994 edition of *Surgical Rounds*, says the results have been excellent in terms of relief from heart-

gastrointestinal endoscopy, acid testing and motility studies of the esophagus) are run on potential surgery candidates.

"If we have a patient who is quite young and dependent on medications, someone who has been on medications for a long time and is tired of taking them or someone who is on medications and still having symptoms, we would consider surgery," he says. "A patient who has developed a complication from the reflux, such as an ulcer or scarring, also would be a good candidate."

Soper also stresses the importance of selecting a qualified surgeon. Because the surgery is technically difficult, he says a surgeon must perform many



In the laparoscopic procedure, the liver is elevated over the esophagus and stomach, freeing the distal esophagus from the diaphragm.

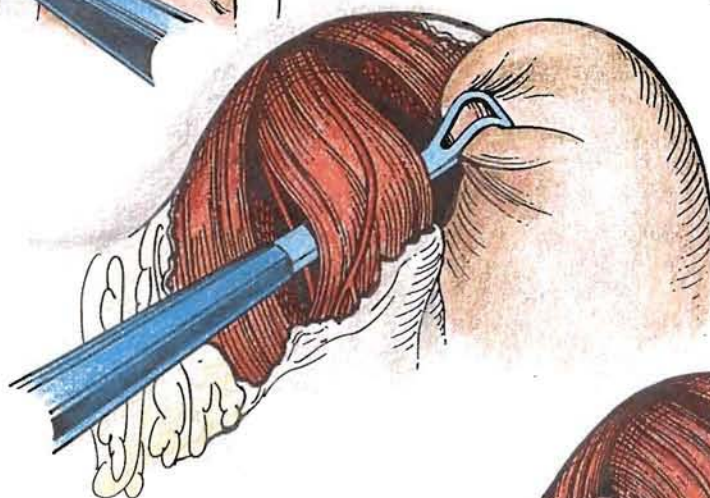
"We think that the better therapy is to reconstruct or repair the mechanically defective valve, and that stops the abnormal regurgitation of stomach contents up into the esophagus, be they acidic or non-acidic."

A Better Way

A group of physicians in Belgium performed the first laparoscopic Nissen fundoplication in 1991; that group now has done more than 500 of the operations. In the United States, the medical center at Creighton University in Omaha NE, has done the most, about 300 such cases.

Soper, who has performed more than 70 Nissen fundoplications in the two-and-a-half years he has been doing the laparoscopic procedure, says there is a monumental difference in how people perceive the standard operation vs. the laparoscopic technique.

"In the four years I was at Barnes Hospital before we started doing this, I did only two of the open Nissen fundoplications," he says. "I haven't changed my indications for when I

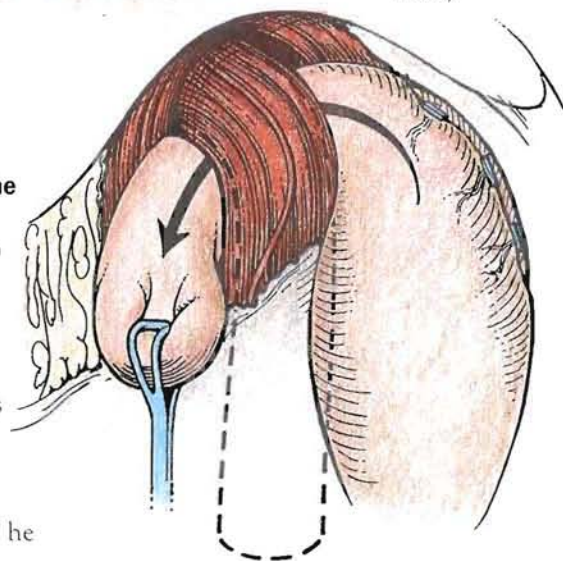


After mobilizing the upper part of the stomach, or fundus, it is grasped and pulled behind the esophagus to the other side.

burn and other symptoms. "Patients go home on no medications and they are back to work within a couple of weeks. People have been really pleased with their outcomes," he says.

He adds that there have been no serious complications with the procedure and says the long-term outcome should be the same as with the open Nissen, which has been shown effective over extended periods.

For all the enthusiasm Soper displays, he is quick to point out that relatively few people are candidates for the operation. Because heartburn and reflux are symptoms common to many people, extensive tests (such as upper



The fundus is pulled behind the esophagus, at which point a dilator is inserted down the esophagus to prevent excessive tightening of the wrap.

surgeries before feeling comfortable. "One of the more challenging aspects of the operation is sewing the wrap in place," he says. "We use long narrow

instruments and we work with two-dimensional video imaging technology, so sewing can be very difficult. It's like trying to sew with one eye shut."

Among the significant complications that can occur:

- There is the chance the wrap may be too tight and inhibit swallowing. To avoid this, a dilator is inserted down through the esophagus while doing the wrap.

- A patient's stomach size, and thus his food intake, may be reduced after surgery because part of the stomach is used for the wrap.

- Often, postoperatively, after the lower esophageal valve is working, patients who had the preoperative habit of swallowing air to force acid back into the stomach continue frequent swallowing but the air does not come up quite as easily, and they feel bloated.

- Some people cannot vomit (either temporarily or permanently) after the operation, and this can cause discomfort.

The most serious complications that can occur are injury to the stomach, esophagus or spleen which can lead to bleeding. In such instances, the surgeon likely would resort to an open operation.

Soper says there are a number of other things that could force him to unexpectedly convert to the open Nissen as well, such as if a patient has an unusually large liver which has to be elevated to visualize the stomach/esophagus area; obesity, which is common in patients with this problem, can also cause obstructed vision, and, if a patient has had multiple upper abdominal surgeries previously, an abundance of scar tissue can make it difficult to work with a laparoscope.

Relief At Last

Lenz, who had his surgery in January 1994, says Soper was surprised when he walked into his office for the first time because he was young and not overweight.

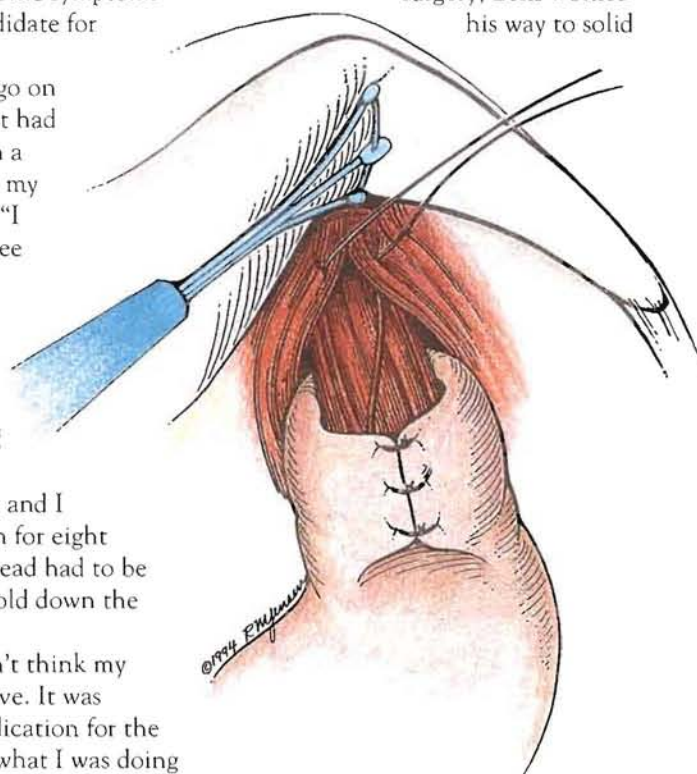
Obesity and advancing age are characteristics shared by most reflux patients. Still, his chronic symptoms made him a good candidate for the surgery.

"I didn't want to go on living like I was, and it had gone on for more than a year by the time I had my surgery," Lenz recalls. "I was going through three bottles of Maalox a week and taking a considerable amount of expensive prescription medications, but nothing was helping. I was living on baked chicken, nothing else, and I slept in the guest room for eight months, because my head had to be elevated at night to hold down the acids in my stomach.

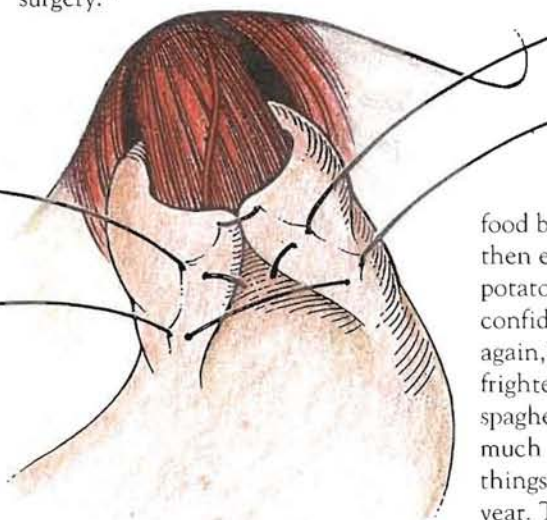
"The doctors didn't think my situation would improve. It was either stay on the medication for the rest of my life and do what I was doing or take a chance and have the surgery."

again to be able to eat normally.

For about two months after surgery, Lenz worked his way to solid



The final appearance of the wrap and closing.



The wrapped fundus is sutured to the opposite side.

food by drinking breakfast drinks and then eating macaroni and mashed potatoes. "It took awhile to build confidence into my eating habits again," he says. "I was a little bit frightened to take my first bite of spaghetti, because it had caused so much agony before. Now I can eat things I wasn't able to eat for an entire year. The heartburn is completely gone, and I can enjoy eating whatever I want." ●

(Illustrations reprinted with permission from *Surgical Rounds*, copyright October 1994, by Romaine Pierson Publishers, Inc.)

An acquaintance of Lenz' who had the open Nissen procedure convinced him to try the operation. Although his friend had the more painful operation and required a six-month recuperation, he told Lenz he would have undergone the procedure

The Gift Must Move

by Alison R. Wakoff, WUMS III

EVERY August, 120 highly motivated young men and women arrive at Washington University School of Medicine to undertake the challenge of becoming physicians. This requires vast investments of time and effort by both the students and the faculty. In the first two years of medical school, most of the learning occurs in the classroom, where students are introduced to a wide range of basic sciences and then asked to apply this knowledge to the clinical sciences.

Medical students are intelligent and curious, intense and critical, anxious and excited. These qualities magnify the many challenges of teaching. Fortunately for students here, faculty members rise to the task and elevate the job of teaching to an art.

These exceptional educators earn our gratitude and respect. Every year since 1986, the first- and second-year classes have each chosen a Professor of the Year and a Lecturer of the Year from among the teaching faculty. We identify an additional 15 faculty members who also deserve commendation with the Distinguished Service Teaching Awards.

These outstanding professors were recognized for their dedication to teaching during the 1993-94 academic year by the classes of 1996 and 1997 at a school-wide ceremony on December 5.

What makes these teachers special?

Robert Wilkinson, Ph.D., course master of physiology, was named Professor of the Year by the first-year class of 1997. He emphasizes the influence of his department chair,

Philip Stahl, as a critical factor in the success of his course and his ability to spend time developing his own teaching skills. "He lets it be known that he cares about teaching and that he takes teaching into consideration" when making departmental decisions, Wilkinson says of Stahl.

Wilkinson approaches his lectures by focusing on a conceptual

information and themes accessible to students." He tries to keep up with advances in education as well as science. For example, several years ago he attended a conference on problem-based learning, and then initiated the course here as an elective for first-year students.

Wilkinson arrived at Washington University in 1975 and began teaching neuromuscular physiology.

His current responsibilities include serving as course master of physiology as well as teaching neurobiology and physical chemistry to graduate students. What is most rewarding, he says, is "seeing students think that something is cool" — watching their faces when they suddenly understand a concept.

When asked to describe his approach to teaching, Jeffrey Saffitz, M.D., Ph.D., offers a revealing response: "First and foremost, I really enjoy it." Saffitz, who was named Professor of the Year by the class of 1996, teaches the cardiac section of pathology. A love of teaching has guided his career since he was a house officer at Washington University, which is when he began teaching medical students.

Saffitz came to Washington University as an intern after graduating from Case Western Reserve in 1978. He became interested in heart disease during his residency. Because he knew he enjoyed teaching, Saffitz approached the course master of the sophomore pathology course about giving the lectures on cardiac pathology. The course master was overjoyed to find a volunteer, and Saffitz began his



Robert Wilkinson, Ph.D.



Jeffrey Saffitz, M.D., Ph.D.



Dana Abendschein, Ph.D.



Kevin Roth, M.D., Ph.D.

approach to physiology. "It's how I teach myself — I try to think about ways to understand things," he says. Because physiology is such an open-ended field, Wilkinson emphasizes the critical ideas and concepts that are essential to understanding how the body functions. He tries to balance the twin goals of "having a demanding course which requires students to think and making the

teaching career while still a house officer.

What most surprised him about teaching was the amount of time it required. "I put 100 hours of work into three hours of lecture," he says. Still, he feels that the rewards are worth it. "I am at an academic center because I love working with students, residents and fellows," he says. "It's a real challenge to face a new group of bright, probing and inquisitive people. It keeps me on my toes." Part of his motivation to excel at teaching comes from the enormity which Saffitz sees in his task. "Heart disease is the number one cause of death in the United States. Everyone gets it, and every doctor deals with it. And it's my job to teach it." Clearly, he does his job well.

Dana Abendschein, Ph.D., attributes his success as a teacher to the influence of his own excellent instructors as a graduate student in physiology at Purdue University and as a postdoctoral fellow at the University of California, San Francisco. "I was taught by master teachers who emphasized the importance of communicating basic physiologic principles," he says. Named Lecturer of the Year by the first-year class for his instruction in physiology, Abendschein teaches cardiac function and principles of electrocardiography.

He arrived at Washington University in 1983 and began teaching in 1985. Abendschein says he particularly enjoys making education fun for students, with liberal use of demonstrations. "If you can see something, it sticks," he says. "I use demonstrations to solidify real life examples of physiology." Always striving to hone his skills as a communicator, Abendschein keeps notes every year about what went well and what seemed confusing and constantly tries to improve his techniques and update his lectures.

With an easy manner and clear, logical explanations, Abendschein has attained his goal of becoming a master teacher himself.

Also honored is the second-year class' perennial favorite Lecturer of the Year, Kevin Roth, M.D., Ph.D. His lectures in neuropathology have earned him this award for the third year in a row. After completing his pathology residency at Washington University in 1989, Roth joined the faculty as an assistant professor and began teaching the neuropathology

section of the sophomore pathology course.

Roth's approach to teaching is guided by a few clear principles. First, he believes in encouraging excellence by adhering to the highest standards, both for himself and for students. "If you're going to teach, do it well," he says. "If you're going to teach medical students, who are burning for knowledge, you owe it to them and to yourself to do a good job." Furthermore, he has a strong respect for the individual: "The school's job is to provide students with opportunities, not to fit everyone into a square hole." He understands that each student wants something different out of medical school. His goal is to make his information accessible to all students so that everyone achieves a baseline level of knowledge about neuropathology, which is critical for all doctors to possess. For those who want to go beyond the essentials, Roth makes himself available to students at any time. "Five years from now, if you remember the basics, I consider that a success. If you remember details for the test, and forget them one week later, I

have failed," he says.

Finally, Roth remembers what it was like to be a medical student and tries to bring to his lectures the same qualities that he enjoyed. He loves to teach, and his informal style makes students feel comfortable. "I try to have fun, while still doing right by students and being the best teacher I can be," he says. Roth has done an outstanding job of striking this difficult balance.

These four remarkable individuals represent some of the best that the School of Medicine has to offer. The 15 Distinguished Teaching Award recipients from each class also deserve recognition for upholding the standards and maintaining the spirit of medical education. They are:

Class of 1996

Jacques U. Baenziger, M.D., Ph.D.
William E. Clutter, M.D.
Peter B. Corr, Ph.D.
Edmond C. Crouch, Ph.D.
James A. Ferrendelli, M.D.
Scot G. Hickman, M.D.
Eugene M. Johnson, Jr., Ph.D.
Leslie E. Kahl, M.D.
James B. Lefkowitz, M.D.
Michael B. Lippman, M.D.
Diane F. Merritt, M.D.
Alan L. Pearlman, M.D.
Elizabeth F. Pribor, M.D.
Alan L. Schwartz, M.D., Ph.D.
Lawrence Tychem, M.D.

Class of 1997

Michael G. Caparon, Ph.D.
Glenn C. Conroy, Ph.D.
S. Bruce Dowton, M.D.
Jeffrey I. Gordon, M.D.
George S. Kobayashi, Ph.D.
Jeffery Lichtman, M.D., Ph.D.
Robert P. Mecham, Ph.D.
David N. Menton, Ph.D.
Robert W. Mercer, Ph.D.
Stanley Misler, M.D., Ph.D.
Jean Pappas Molleston, M.D.
Jane Phillips-Conroy, Ph.D.
Linda J. Pike, Ph.D.
David F. Silbert, M.D.
Lawrence Tychem, M.D.

To all of these outstanding teachers, the Classes of 1996 and 1997 offer their thanks. ●

Faculty members rise to the task and elevate the job of teaching to an art.

Boundless Concern — *Helen Aff-Drum, M.D.*

by Steve Kohler

IN THE 60 years since she completed her schooling, Helen Aff-Drum, M.D., has found a remarkable mixture of ways in which to express the concern and the nurturing that largely define her nature. She is or has been pediatrician, wife, mother, gardener, tuberculosis expert, public speaker, volunteer, school physician, farmer and self-assigned worrier for the declining state of the society in general.

A concern for others and a peculiarly Germanic need to do the work that exists to be done reside somewhere near the core of the woman whose family name forms the basis for the name of Affton — a St. Louis area community. "I happen to like to work," she says of herself, underlining what is clear from the quickest scan of her life.

Aff-Drum graduated from Washington University School of Medicine in 1934. Though only seven women were in the class, she recalls no particular gender-based travails. But, she says, "We all worked hard; it took fortitude. And we all made sacrifices and gave up many other parts of our lives, especially since it was the Depression." The lack of money only made her class draw more closely together: "We played cards together; there was no money for anything else," she says.

It is her medical education that has made possible so much of what Aff-Drum has done: "I am so glad that I did it. My education has made everything possible. Now, as long as there's work, I can do it."

The majority of Aff-Drum's professional endeavor has focused on

"He delivered the babies, and I took care of them; it was a wonderful arrangement," she says.

The private practice, located in north St. Louis, prevailed for 26 years, four years beyond Clarence Drum's death in 1960. For 40 years, Aff-Drum also served as physician to the Clayton School District, conducting scoliosis screenings and seeing after schoolchildren's specific complaints.

In addition, Aff-Drum has been a tireless volunteer for the American Lung Association and founded and operated a number of clinics. From 1963 until 1993, she treated tuberculosis patients at the St. Louis County Clinic.

In that capacity, she was called in 1990 to the Robinwood School, where three children had tested positive for tuberculosis. Aff-Drum tracked the outbreak to its source, a gym teacher who had a cough and had known of his positive skin test but had not sought treatment. "We treated 30 children for

tuberculosis, even the CDC came to help," Aff-Drum says. "It was very expensive. If that one teacher had been taking medicine, it all could have been prevented."

That experience and others have led Aff-Drum to devote much



Helen Aff-Drum, M.D.

children, tuberculosis and public health. Following two internships, a residency and her wedding, Aff-Drum went into private practice with her general practitioner husband, Clarence G. Drum, M.D., (affectionately known as Drummy).

of her energy to public education and the instruction of healthcare workers about tuberculosis. "Even many private doctors are not aware about TB. But we have good literature, and I keep trying to teach," she says. "I try to get the medical community to 'Think TB.'"

Today, Aff-Drum is a proponent of directly observed therapy, a treatment program in which TB patients either must come to the clinic to receive their medication or be visited by an outreach worker who administers it. "You don't always feel bad when you have TB, and people often don't take their full course of medicine," she says. "The only way to be sure is to observe them directly. And it's important, because with the resistant strains now appearing, treatment can be very difficult and expensive."

Geographically, Aff-Drum's work has taken her beyond the city practice and the county clinic. In 1941, she and her husband purchased the rural property outside Warrenton on which she continues to run an 80-head cattle operation. Weekend trips to the farm eventually led Aff-Drum to establish well-baby clinics in both Warrenton and Troy. "A nurse came to me at the farm and said that the county needed a clinic," Aff-Drum relates. Soon enough, the doctor had seen to the details of creating one. She retired only last year — at age 85 — from the Troy operation because driving rural roads had become a burden.

Her connection to country life has been more than a respite from

the city's bustle for Aff-Drum. The Warrenton property has evolved to become one of her family's focal points, a place where the clan gathers for holidays and vacations. For Aff-Drum, such a center is of more than passing interest. The continuity that a secure family provides is among the most important benefits a child can have,

"My education has made everything possible. Now, as long as there's work, I can do it."

according to the pediatrician who has seen children both affluent and poverty-stricken, both urban and rural. "They're all kids; for all of them, family is the most important," she says. "If we had more family structure and fewer children having children, then we'd also have fewer drive-by shootings and less crack cocaine and venereal disease."

Using the simple example of her four great-grandchildren gathered in the bathroom of the farmhouse to brush their teeth, Aff-Drum explains that the one-year-old — who has only two teeth and no concept of tooth decay — learns by example an important bit of personal hygiene that will serve for a lifetime. By being included in the family ritual, lessons that can be taught in no other way are passed along.

The farm family, in which the father is home for the noon meal and in which religion often plays a powerful role, seems to Aff-Drum a more appropriate environment for raising a child than a single parent flat. "So many young people seem to

lack all caring and concern. I wish I knew how they all could be made to understand that you only get one body to live in," she says.

Aff-Drum's own models were two: Mildred Trotter, noted anatomy professor at the School of Medicine, and, before that, the female homeopathic doctor who cared for the family during Aff-Drum's formative years at home.

The paradigm they provided are what Aff-Drum fears may be

missing for so many today. She laments having to

write two prescriptions for her young patients — one for the mother to fill and one for the father to fill so that medicine will be available at both places in which the child resides. "How can a child understand that?" she asks.

Aff-Drum continues to pass along what she has learned about tuberculosis, children's health and other topics. She recently has been involved with instructive sessions for nursing and retirement home workers, mental health professionals, teachers, nurses, prison workers and preschool employees.

Her disposition is to care about all the people she encounters, whether they are patients of many years or casual acquaintances. A visitor leaving Aff-Drum's St. Louis County home — the old Henry Litzsinger farmhouse built in the 1860s — will not get away without receiving a gentle warning about the traffic and advice to drive carefully. ●

Second Century Award Winners Honored

THE School of Medicine's Second Century Award celebrates the institution's second hundred years of excellence in research, teaching and patient care and is conferred in recognition of individuals whose long-term commitment, dedication and generous participation have made it possible for the School of Medicine to enter its second century with strength and confidence.

"The Second Century Award honors those whose dedication, intellect and illuminating spirit empower the important work being done at the School of Medicine," says William A. Peck, M.D., executive vice chancellor for medical affairs and dean of the School of Medicine.

Second Century Awards for 1994 were presented on October 7 at a gala dinner held at the Ritz-Carlton Hotel. The honorees were I. Jerome Flance, M.D., Paul E. Lacy, M.D., Ph.D., and Philip Needleman, Ph.D. Flance is a private practitioner and professor of clinical medicine at the Washington University School of Medicine. He has been a devoted faculty member and active participant in school and community affairs for more than 50 years, serving as a role model for generations of students and as a singular advocate for support of the School of Medicine.

Flance helped establish the Home Care Program at The Jewish Hospital in 1953, serving as its director for 11 years, and he instituted a home care program for tuberculosis patients, the first such formal program in the United States. He currently serves on the School of Medicine's National Council.

In 1976, Flance's peers and patients established the I. Jerome Flance Visiting Professorship to honor his superb teaching. He received the Distinguished Alumni Award at Founders Day in 1986. In 1990, the Washington University Medical Center Alumni Association presented him the Alumni/Faculty

His exceptional achievements in this field have brought him international acclaim. He is a member of the National Academy of Sciences and of the Institute of Medicine, honorary president of the Cell Transplant Society and a fellow of the American Academy of Arts and Sciences. In 1981, the country's

most respected experimental biologists bestowed upon Lacy their highest award, the 3M Life Sciences Award from the Federation of American Societies for Experimental Biology. In 1983, the Annual Paul E. Lacy Award and Lecture was established by the National Diabetes Research Institute in his honor. Earlier this year, the Washington University Medical Center Alumni Association presented him the Distinguished Service Award of 1994.

Philip Needleman, Ph.D., is senior vice president of research and development at Monsanto Company and corporate senior vice president and president, research and development at G.D. Searle & Company. He is also research professor in the Department of Pharmacology at the School of Medicine.

During his 25 year academic career, he has trained many medical graduate and postdoctoral students. One of the first projects to bear fruit in the collaboration between Monsanto and the School of Medicine was Needleman's research that identified and synthesized a hormone that lowers blood pressure and controls fluid and salt metabolism.

Needleman came to Washington University in 1964 as a



Second Century Award recipients Paul E. Lacy, M.D., Ph.D.; I. Jerome Flance, M.D., and Philip Needleman, Ph.D., share a light moment at the ceremony.

Award. In 1992 a Distinguished Alumni Scholarship was named in his honor, and this year an endowment has been established to name the Rosemary and I. J. Flance Professorship in Pulmonary Medicine.

Paul E. Lacy, M.D., Ph.D., has devoted his enormous abilities to Washington University School of Medicine since he joined the faculty in 1956. He is the Robert L. Kroc Professor of Pathology, a position he assumed in 1985.

Throughout his distinguished career, Lacy has pioneered in research on diabetes mellitus. He has developed techniques for isolating islet cells that manufacture insulin, examining how those islets regulate the release of insulin, and for transplanting islets as a treatment for diabetes.

postdoctoral fellow; he joined the faculty in 1967 and in 1974 was awarded the prestigious John Jacob Abel prize by the American Pharmacology Society. Needleman was named Basic Science Teacher of the Year five times and received the Distinguished Faculty Award at Founders Day in 1987, the same year that he was elected to membership in the National Academy of Sciences. In 1993, he was named to the National Academy's Institute of Medicine. ●

New Directory

WORK on the new directory of School of Medicine alumni and former house staff is underway. Publishing Concepts, Inc. will be sending questionnaires in early January requesting that you update information for your listing in the directory. If they do not receive your update, the information we currently have will appear in the directory.

We are eager to make the directory as comprehensive and accurate as possible and urge everyone to complete the questionnaire and return it promptly. If you do not receive the questionnaire and wish to be listed, please call the Medical Alumni Office at 362-8275.

The new directory is expected to be available in early fall 1995. The publisher will provide information about how you may obtain a copy. ●

Nursing Alumnae Luncheon Scheduled

A COMMITTEE of St. Louis-area nursing alumnae from nine classes met recently with Ruth Bebermeyer and Lisa Portnoy, director and assistant director of alumni and constituent relations for the School of Medicine, to plan a homecoming luncheon for all School of Nursing alumnae. The

luncheon will be held June 10, 1995, at the Frontenac Hilton in St. Louis. Classmates who wish to plan for individual class dinners that evening are encouraged to contact each other

to begin arrangements. Luncheon registration information will be mailed in late winter. Meanwhile, questions may be directed to Ruth or Lisa at 362-1974 or 362-9670. ●

Chairmen Issue Challenge

AS THEY conclude their sixth and final year as Eliot Society cochairmen for the School of Medicine, Phillip E. Korenblat, M.D., and Nicholas T. Kouchoukos, M.D., are challenging alumni, former house staff and friends to join them in their support of the School of Medicine by becoming new members of the Eliot Society. Korenblat and Kouchoukos will match all new Eliot Society gifts received before June 30, 1995, with \$1 for every \$2 donated, up to \$50,000 in matching funds.

On September 26th, the 18th annual Eliot Society Kick-off event

for Washington University was held at the Ritz-Carlton. More than 200 Eliot Society committee members came together to renew acquaintances and to discuss plans for strengthening Eliot Society membership in fiscal year 1995.

Last year, the number of new Eliot Society members reached 104. The School of Medicine Eliot Society increased overall by 9 percent to 465 members in fiscal year 1994. This year, the medical Eliot Society hopes to recruit 110 new members and seeks the continued participation of all 465 members. ●



Phillip E. Korenblat, M.D., and Nicholas T. Kouchoukos, M.D. '61: "The School of Medicine Eliot Society is 465 members strong and growing. We ask those who are not yet members to please join us in our support of Washington University School of Medicine." Korenblat (left) and Kouchoukos (right) are pictured with William A. Peck, M.D., executive vice chancellor and dean of the School of Medicine.

Stein Professorship Established

AN ENDOWED professorship in neurology and a new neurological research fund are being established with funds donated to Washington University School of Medicine and Jewish Hospital in recognition of Elliot Stein.

Stein, a St. Louis businessman, has served as chairman of the board of Jewish Hospital and continues to serve as a director. He also is a trustee of Washington University and a trustee of the St. Louis Symphony Society.

The Elliot Stein Professorship in Neurology at Washington University/Jewish Hospital and the Elliot H. Stein Family Research Fund are being established through generous gifts from individuals, corporations and foundations.

"Washington University is a better institution because it has relied for over a quarter of a century on the knowledge and wisdom of Elliot Stein," says Washington University Chancellor William H. Danforth. "Thanks to his many friends, we now have new opportunities for important advances and greater service."

Wayne Lerner, DPH, FACHE, Jewish Hospital president and senior executive officer, says, "Without Elliot Stein's vision and direction during the past quarter century, the hospital would not be in the position it is today."

"I can think of no better way to recognize the great contributions of Elliot Stein. His extraordinary intelligence and wisdom have enabled him to provide us with strong, assertive leadership," says William A. Peck, M.D., executive vice chancellor for medical affairs, dean of the School of Medicine and president of the Washington University Medical Center.

The Elliot H. Stein Professorship will be awarded to a Washington University faculty member at Jewish Hospital. The Elliot H. Stein Family Research Fund will have clinical and basic research components and will operate as part of the School of Medicine's Center for the Study of Nervous System Injury (CSNSI). ●

Nursing Class of 1952 Holds Reunion

ALUMNAE from the School of Nursing Class of 1952 report having had a wonderful time at their first reunion since graduation, held August 12-14, at the Columbia MO home of classmate Pat Perkins Moore. Eight alumnae and four spouses attended the weekend of activities.

The group is making plans to meet again in Las Vegas in mid-October 1995. If any lost member of this class should see this note, please contact Pat Moore at 7550 Cave Creek Road, Columbia MO 65203. ●

Medical Reunion Plans Underway

REUNION class chairmen and alumni relations staff are preparing for the annual reunion May 11-13, 1995, which will begin with scientific sessions on Thursday afternoon in Moore Auditorium. Registration materials containing the complete schedule will be mailed in January.

Reunion class chairmen are:

Class of 1935:

Richard A. Sutter, M.D., social chair
I. Jerome Flance, M.D., gift chair

Class of 1940:

Llewellyn Sale, Jr., M.D., social chair
Robert R. Anschuetz, M.D., gift chair

Class of 1945:

Marshall B. Conrad, M.D., social chair
Samuel B. Guze, M.D., gift chair

Class of 1950:

Meredith J. Payne, M.D., social chair
Rudolph E. Catanzaro, M.D., gift chair

Class of 1955:

Miles C. Whitener, M.D., social chair
Robert C. Drews, M.D., gift chair

Class of 1960:

Gustav Schonfeld, M.D., social chair
Floyd E. Bloom, M.D., gift chair

Class of 1965:

Thomas F. Ott, M.D., social chair
Margaret C. Telfer, M.D., gift chair

Class of 1970:

Francisco Garriga, M.D., social chair
David W. Ortbals, M.D., gift chair

Class of 1975:

David Clifford, M.D., social chair
Kenneth S. Rotskoff, M.D., gift chair

Class of 1980:

Lisa B. Ring, M.D., social chair
Matthew S. Bodner, M.D., gift chair

Class of 1985:

Herluf G. Lund, Jr., M.D., social chair ●



Glenn C. Conroy, Ph.D., right, professor of anatomy and neurobiology, was one of four faculty honored with the Distinguished Faculty Award at Founders Day in October. Conroy, who joined the Washington University faculty in 1983, has been honored many times by medical school students for the quality of his teaching in human anatomy and was named Teacher of the Year by both the first-year and senior medical classes. He is pictured with William A. Peck, M.D., executive vice chancellor for medical affairs and dean.

'20s

Charles C. Huntley, M.D. '29, writes that he and his wife of 63 years, Helen Huntley, now live in a beautiful retirement home in Missoula MT, after traveling worldwide. The Huntleys spent many years in Council Bluffs IA, where Huntley was a general surgeon for 38 years before coronary disease forced his retirement. After moving to Missoula in 1970, he was persuaded to direct the health department. In 1991, he underwent open heart surgery for an aortic valve replacement and two bypasses and now says that, at age 90, he "has no hearing aid, reads without glasses and lives a normal and active life." He writes widely on varied subjects as a hobby.

Their son, Hugh C. Huntley, M.D. '63 also has retired, and he and his wife are enjoying traveling, hunting and fishing. Prior to retirement he headed a diagnostic radiology group in Missoula.

'30s

Carl P. Birk, M.D. '34, suffered a stroke on August 8, 1994 and has been hospitalized at Decatur Memorial Hospital in Illinois where he was on staff for 51 years. His wife reports that he is doing well and is now able to walk with assistance.

Ralph C. Greene, M.D. '34 and Mrs. Greene celebrated their 60th wedding anniversary in June with many relatives present to congratulate them. In July, they joined the Queen Elizabeth 2 tour of World War II sites, revisiting some of the places familiar to Greene from his wartime experience. He traveled from New York to Glasgow on the Queen Elizabeth 1 in August 1943.

'40s

Ewald W. Busse, M.D. '42, became president emeritus of the North Carolina Institute of Medi-

cine in October, completing a seven-year term as president. He continues his professional activity in neuropsychiatry and gerontology.

'50s

John S. Spratt, M.D., FHS '52-'59, is the newly named president-elect of the Kentucky division of the American Cancer Society. He will serve as president in 1994-'95. He is professor of surgery and health systems at the J. Graham Brown Cancer Center, University of Louisville.

In July, the governor of Washington appointed **Robert C. Newell, M.D.** '57, to the State Medical Quality Assurance Commission. Ostensibly retired for the past year, Newell went to Nepal last February where he spent five weeks holding otology clinics, doing surgery with Mrs. Newell (Irene) as scrub nurse and training health care workers in ear care and diagnosis.

'60s

Melvin C. Dace, M.D. '62, has recently retired after 25 years of cardiology practice. He will fulfill a lifelong dream by becoming assistant to the medical director of the 1996 Summer Olympic Games in Atlanta.

Sylvester Sterioff, M.D. '63, has been named the James C. Masson Professor of Surgery at the Mayo Clinic. He has been a member of the Mayo surgical staff since 1976 and is chair of the Division of Transplantation Surgery.

Michael R. Treister, M.D. '67, has been appointed to the board of directors of the Jewish Federation of Metropolitan Chicago/United Jewish Fund. He also reports great pride in the naming of his wife, Dana Shepard Treister, to the presidency of the Women's Board of the Museum of Contemporary Art.

Joel M. Karlin, M.D. '68, has been elected president-elect of the Colorado medical Society. He is a

member of the Colorado Delegation to the AMA and has contributed to policy development and legislation in areas of health system reform and managed care both nationally and in Colorado. He is senior physician in private practice with Denver Allergy & Asthma Associates. He lives in Denver with his wife, Caroline, and two teenage daughters.

Donald R. Kirks, M.D. '68, has been appointed first incumbent of the John A. Kirkpatrick Professorship in Radiology at Harvard Medical School. Kirks is chairman of the Department of Radiology and radiologist-in-chief at Children's Hospital, Boston. He is past president of The Society for Pediatric Radiology and the Association of University Radiologists.

'70s

George M. Bohigian, M.D. FHS '66-'70, was presented with the Honor Award by the American Academy of Ophthalmology for scientific and educational contributions to the academy. The award was presented at the annual meeting of the academy in San Francisco on October 30.

Lary A. Robinson, M.D. '72, moved to Tampa in August 1994, where he has joined the faculty of the University of South Florida as associate professor of surgery. He is a thoracic surgery oncologist at the H. Lee Moffitt Cancer Center and Research Institute there. He and his wife have a new son, Joshua Davis, born July 6. Joshua joins a brother, Schuyler Allen, age three.

Mario G. Fiorilli, M.D., FHS '75, writes that he and his partner have merged their practice with another in Roanoke Rapids NC, the new group to be known as Halifax Medical Specialists, P.A. In a postscript Fiorilli notes that he is, "Sorry, but couldn't help it," that his daughter opted to attend the University of Chicago rather than Washington University.

'80s

Susan D. Rollins, M.D. '84, and Edward S. Rollins, M.D. '84, are the parents of a son, Sterling Davidson Rollins, born September 18, 1994. Sterling weighed seven pounds, five ounces. The family resides in Johnson City TN.

Robert J. Optican, M.D. '88, has joined Mid-South Imaging & Therapeutics of Memphis as a member of the diagnostic radiology division. He is the group's first cardiopulmonary imaging specialist.

IN MEMORIAM

Edward C. Halley, M.D. '24, died September 7, 1994, in Santa Cruz CA.

Bernard S. Clark, M.D. '32, died August 17, 1994, in Spearfish SD. He was 88. He had retired from the private practice of medicine in 1970 after 40 years serving the people of South Dakota and delivering more than 2,000 babies. He counseled patients in the best tradition of the small town private practice and earned respect for his dedication, honesty and humanity. Clark spent many years on the Spearfish School Board and was deeply interested in the history of the Black Hills. He is survived by his wife, two daughters, one son, eight grandchildren and two great-grandchildren.

Clarmont (Monty) Doane, M.D. '33, died April 7, 1994, at age 89 in Fresno CA. Doane, a retired orthopedic surgeon, was a former president of the Fresno County Medical Society and a Fellow of the American College of Surgeons and the International College of Surgeons. During World War II, he served as a U.S. Navy shipboard doctor in the Pacific. He was a life member of the Rotary Club of Fresno, where he held a record of more than 53 years of perfect attendance. He is survived by his

wife, Margaret Taylor Doane, and two children.

Harry Rosenbaum, M.D. '34, professor emeritus of ophthalmology, died September 25, 1994, after a long illness. He was 83. He practiced ophthalmology for more than 50 years in the St. Louis area and served as president of the medical staff at The Jewish Hospital of St. Louis from 1970 to 1972. Among the survivors are two children, a brother and three grandchildren.

Orville L. Barks, M.D. '38, died May 7, 1994, in Sanford FL, where he had practiced medicine since 1942. For three years, he was a prisoner of war in Germany. From 1945 to 1960 he was engaged in general practice and later practiced anesthesiology until 1975, retiring in 1978. He is survived by his wife and four sons.

John T. Skinner, M.D. '39, a Kansas City general practitioner and surgeon, died September 11, 1994, at his home. He retired in 1980 from a 40-year practice that included service as chief of staff at St. Joseph Health Center. Survivors include three daughters, two sisters and nine grandchildren.

Maurice Woll, M.D. '39, a physician and surgeon in the Wood River IL area for many years, died Sept. 19. Survivors include his wife, five sons and nine grandchildren.

Roberts B. Pappenfort, Jr., M.D. '43, died October 7, 1994.

Louise Adams, NU '46, died January 3, 1994, after a long struggle with emphysema.

Naomi Arenburg, NU '46, died of an aneurysm on October 5, 1994, in Biloxi MS, at the age of 69.

Mary Anderson Alexander, NU '48, died August 27, 1994 of a heart attack while vacationing in Portugal with her husband and daughter. A memorial service was held in Tucson AZ, where she had been an associate professor at the University of Arizona College of Nursing and adviser to international

nursing students until her retirement in 1993. During her career, Alexander worked at a health clinic in Brazil; as a school nurse in Taipei, Taiwan; as a Peace Corps nurse in Kabul, Afghanistan, and as a Project Hope instructor at Alexander University and the University of Asyut in Cairo, Egypt. She moved to Tucson in 1984, having received a doctorate in education from Boston University in 1980. In addition to her position at the University of Arizona, she established and taught health programs in China and Indonesia for the World Health Organization from 1989 through 1993 and co-founded a health clinic on the Pascua Yaqui Reservation in Arizona. Survivors include her husband, Harry Alexander, three daughters and two sons.

Francis W. Michel, M.D. '55, a hematologist and longtime faculty member at Stanford, died September 25 at age 65. He succumbed to complications related to leukemia at El Camino Hospital, where he was a physician for 23 of the 30 years that he practiced medicine in Mountain View CA. A dedicated and consistently active teacher of medical students, residents and fellows, he was a native of Fresno CA. Survivors include his wife and five children.

Hall Edward Harrison, M.D., '65, died of complications from a cerebral hemorrhage on January 29, 1994, in Topeka KS, at the age of 54. Harrison was a pioneer in the development of cardiovascular services in northeast Kansas and a clinical professor of medicine at the University of Kansas, where he trained many residents. He was a member of the medical staffs at Stormont-Vail Regional Medical Center and St. Francis Hospital and Medical Center and a Fellow of the American College of Cardiology and the American Heart Association Council on Cardiology. Harrison is survived by his wife, a son and a daughter. ●



U.S. Senator Daniel P. Moynihan, D-NY, spoke to medical school staff and students in September on the status of healthcare reform and the outlook for academic health center assistance during a live teleconference. Moynihan, who at the time chaired the Senate Finance Committee, was the inaugural guest as the School of Medicine joined CenterNet, the Academic Health Center Television Network. CenterNet delivers live, interactive video conferences to medical centers nationwide, and viewers from across the country can ask questions through telephone links to the studio site.



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Interior lights illuminate the striking architectural features of the new Imaging Center, opened officially on Nov. 11 by Mallinckrodt Institute of Radiology at Washington University. The 70,000-square-foot building houses both magnetic resonance imaging and positron emission tomography scanners. The design is by architects Stone Marraccini & Patterson. For more about the opening, see page 5.